

PASSENGER TRAFFIC ISSUE

NOVEMBER 30, 1935

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Railway Age

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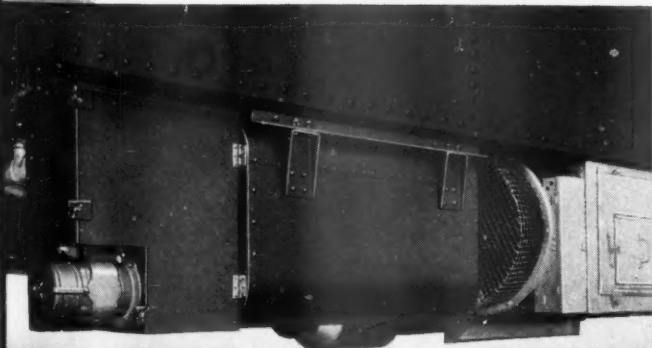
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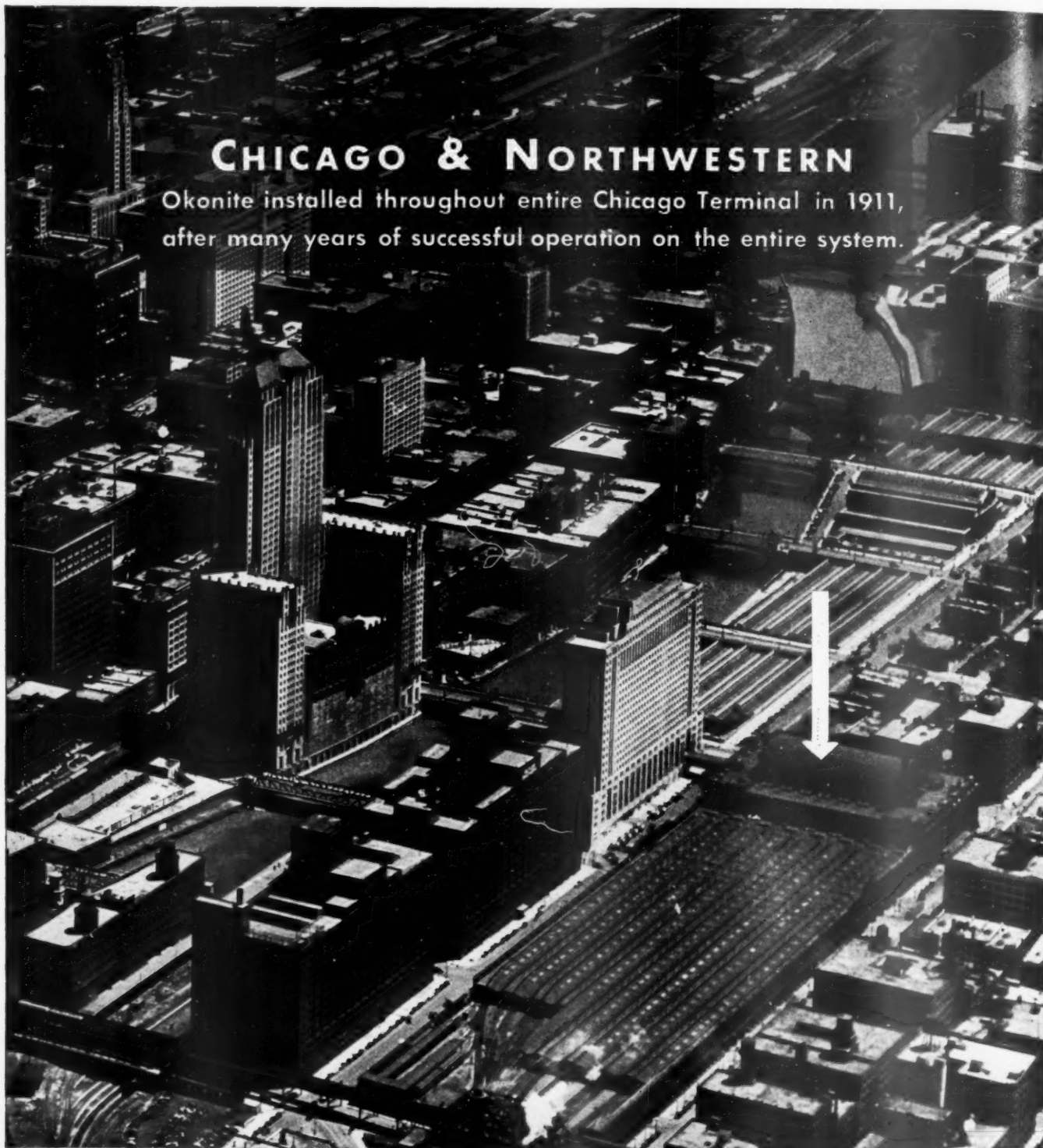
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Passenger Traffic Issue

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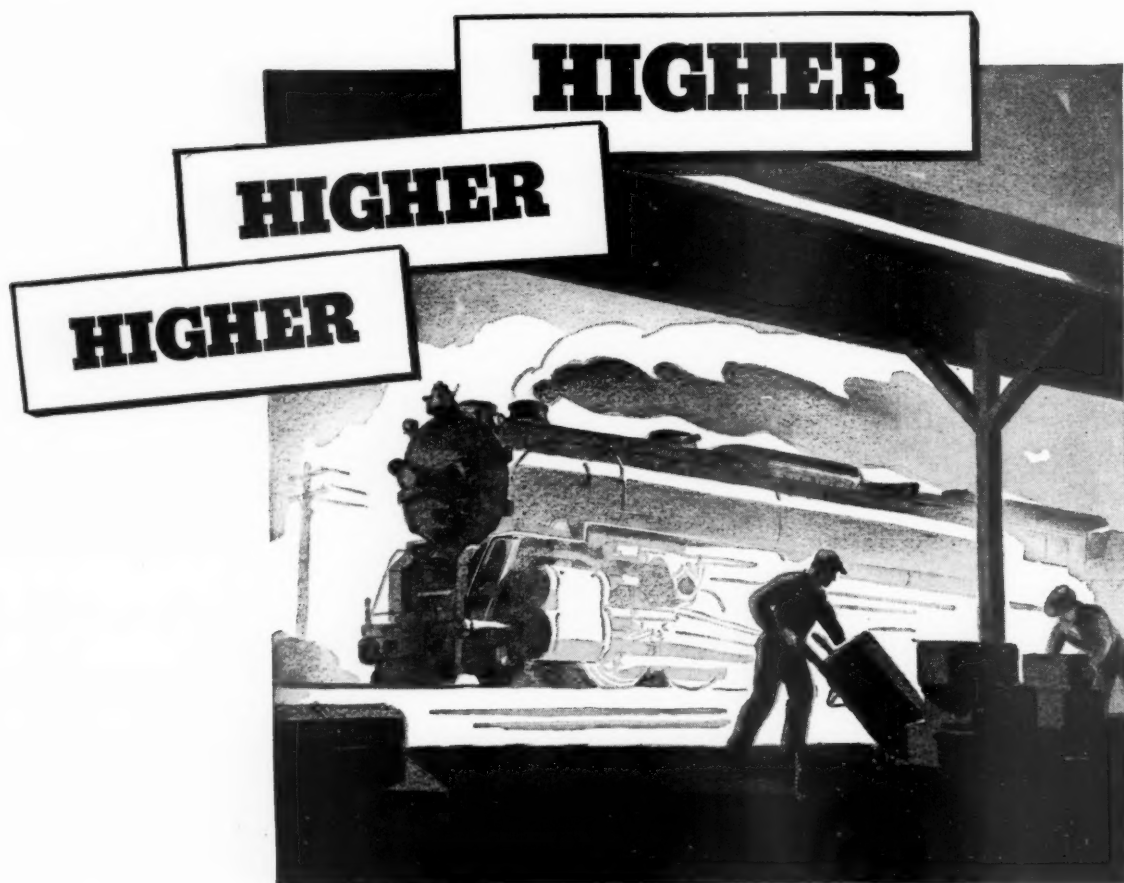
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Rebuilding Railway Passenger Business

After having lost their passenger business steadily and rapidly, until in 1933 it was 65 per cent smaller than in 1920, the railways have begun within the last two years to regain it. The problem it presents illustrates something that the directors and executives of every successful concern must know—viz., that to sell anything requires not merely what is called “selling”, but the co-operative efforts of the concern’s entire organization and personnel to produce something that can be sold. The public little realizes the revolutionary changes now being made, and that must be made in future, not only in “selling”, or even also in locomotives and cars, but also in tracks, signaling, operating methods, and employees’ training and work, in order to enable the railways to rebuild their passenger traffic. It is almost like starting a new business. They have the advantage of building on an old and strong foundation. They have the disadvantage of having gradually to tear away a superstructure of old facilities, methods and traditions while erecting a new superstructure.

Significant Increases of Traffic

The reconstruction began as recently as in the spring of 1934, when the first light, streamlined trains with new kinds of power were put in service by the Union Pacific and Burlington. What has since been done, and the results obtained, are shown in articles appearing elsewhere in this issue. Although but a beginning, they are significant and encouraging. Project the trends established during two of the most depressed years in all history, and they forecast rapid and extraordinary developments during a protracted period of more favorable conditions. Passenger traffic and earnings have increased in 1934 when there was a Century of Progress exposition, and again in 1935 when there was no such favorable influence. There have been numerous reasons. General business improved, but it was improving from 1923 to 1929 when railway passenger business was steadily declining. The evidence indicates that the recent increases have been due to efforts of various kinds made by the railways themselves—installation of improved or new kinds of power and cars, increases in speeds, better showmanship, advertising and selling, reductions of rates. Railroads by groups and individually have become laboratories, in which many kinds of co-operative and competitive experimentation has been done. The results have varied widely, indicating the improvement has been due to different causes operating with unequal effect. The experiments and experience of all will ultimately help

solve the passenger problem of each. It is possible as yet, however, to draw only tentative conclusions from the experiments already made.

What Does the Public Want?

By steadily leaving the railways before 1930, when general business was good, and leaving them more rapidly during the next four years, when business was bad, the traveling public showed it was not satisfied with the service being rendered, or the rates charged for it, or both. What does the public want? Can the railways profitably furnish it what it wants? Or can it be made to want what they can profitably furnish? These are the questions to which the railways are trying to find the answers. Even experience with the competing services, rates and costs of automobiles, buses and aeroplanes only partially suggests the answers, because, owing to their differences, each kind of transportation has natural, inherent advantages and disadvantages. The problem of meeting outside competition which offers such low rates as the buses, such convenience as the private automobile and such speed as the aeroplane is a very complicated one.

Meeting Outside Competition the Problem

It cannot be too strongly emphasized that the real, vital passenger problem of the railways is to *meet outside competition and create new business*. They will accomplish little by competing more intensely with each other, or even by reducing the cost of carrying the present or a somewhat larger traffic. They have available tracks, stations and other facilities with which they actually have in the past handled a peak passenger traffic four or five times as large as they are handling now. The capital, maintenance and operating costs of these facilities continue largely regardless of the volume of traffic carried. Friendly and discriminating survey of recent and current developments makes it hard to escape the conclusion that the railways are prone to “revert to type”—to more or less forget that their real task is to increase the total passenger traffic moving by all railways principally by recovering as much as possible of the 65 per cent of their former traffic that they lost, and not to intensify the struggle among themselves over the division of the 35 per cent that they did not lose.

Frequency and Comfort of Service

One very important factor in the problem of meeting outside competition which seems to be receiving too

little attention is that of frequency of service. The greatly increased use of automobiles for trips that otherwise would have been made by train probably has been principally due to the fact that a trip with an automobile can be begun at any time. This kind of competition cannot be met excepting with frequent rail service. The railways have almost all the facilities for rendering more frequent service excepting enough of the right kind of equipment for rendering it at the minimum practicable cost. Perhaps the cost of a frequent enough service would be greater than the earnings from the traffic that would be recovered; but there is no way to determine this without experimenting with more frequent service, especially in territories where a large potential traffic is available.

The railways can provide more comfort than any other carriers, and the public wants comfort. How much it wants and values it really was never known until the introduction of air-conditioning, which has been received with more expressions of appreciation from travelers than any other railway innovation within fifty years. It needs more advertising, however, because a great majority of the people have never travelled in a car equipped with it and do not yet know enough about it to realize that it is uniquely essential in most of the country, under extreme weather conditions, whether of summer or winter, to make travel comfortable by any means of transportation. The comfort of travel by rail has been increased within recent years by various other means—especially by improved lighting, and better arrangement and seating of cars, both sleepers and day coaches. The introduction of single rooms for overnight trips has been a great improvement.

There are still many trains and cars in which travel is uncomfortable. It is unquestionable, however, that the better daylight and sleeping car trains now afford much more comfort than any other means of travel, and the railways should capitalize in every practicable way their superior opportunity for affording travel comfort.

There is a great difference between the *luxury* needed for long trips and the *comfort* which is all that is needed for trips that can be made within a few hours. It is now generally conceded that it was a mistake, even for short trips, to make the first light, streamlined cars so narrow, and undoubtedly all those built in future will be more roomy. There is apparently a tendency now, however, to furnish too much luxury, and the space required for providing it, for short trips. This involves increased cost which, it would seem, might better be incurred in providing more frequent service. Is not this tendency to provide luxury where it is not needed due to thinking of competition with other railways, when the real problem is that of meeting air and highway competition?

Speed, Economy and Safety

How much speed by rail does the public want? With what kinds of equipment can it be attained with

maximum comfort and minimum cost? How radical changes in track and signaling is speed going to require? Will speed help the railways to win enough passengers back from automobiles and aeroplanes to make it pay? How much speed by rail is consistent with safety, and how much does the public care for safety as compared with speed?

During the quarter century before the advent of competing transportation by highway and air the efforts of railway managements were devoted principally to increasing the *economy* and *safety* of operation. The accomplishment of these purposes required maximum strength of equipment, and, with the materials available, this meant heavy equipment, both freight and passenger. When tracks were congested with traffic, speed seemed incompatible with handling the volume of business available with the greatest practicable economy and safety. It was just when the railroads had reached their highest development to accomplish the three purposes of (1) rendering adequate and reliable service with (2) maximum economy and (3) maximum safety that there appeared outside competition which has made it necessary to reorient their policy. It is not without significance that the remarkable increases in train speeds have occurred during years of light traffic. Could such increases of speed have been made when a heavy traffic was being moved. What would have been the effects upon economy and safety? What will be the effects upon economy and safety of maintaining them after traffic, especially freight, largely increases? The storm of sentiment arising about accidents on the highways shows that the public will not permanently remain complacent regarding a great and increasing toll of deaths and injuries. What will be its attitude if changes now being made in railway operation result in reversing the last quarter century's splendid record of reduction of railway accidents?

Problems of Equipment, Track and Signaling

Increased speeds on the railways undoubtedly have come to stay, however. Schedules for both daylight and long overnight and overland trips seem sure to be reduced throughout the country. The public little realizes what a problem the accomplishment of this presents to railway managements, which must consider both comfort and safety for the passenger, and economy for the railway. What kinds of power and cars shall be used for commutation service, for distances up to say, 100 miles, and for through service? The rendering with economy and safety of high speed, long distance, "on time" service in large cars presents numerous problems to the railway management, the locomotive builder and the car builder. Can steam or Diesel engines best furnish the power? How much power per train will be required? How much will day coaches and sleeping cars have to be redesigned and lightened in order to minimize the amount of power required to pull a fast train at speeds up to 100 miles an hour—for maximum speeds up to 100 miles an hour must be made in many parts of the country to maintain

schedules averaging 60 miles an hour for long distances? How about tracks—because tracks must be adjusted to speeds and to the kinds of equipment used in making them? How about signaling—because signaling requirements change in proportion as the speeds of individual trains change and the differences between the speeds made by different trains upon the same track change? Only much and greatly varied experience will answer these questions. There will be found disconcerting “bugs” in every kind of new equipment and method tried. Theorists may theorize and researchers may research; but only the hard, costly tests of varied experience under service conditions will solve the problem of speeding up railway passenger service with comfort and safety to the passenger and reasonable economy to the railways.

Selling Must Be Revolutionized

Will the efforts being made to attract passengers back to the railways prove profitable? That will depend almost entirely upon the volume of passenger business built up. That, in turn, will depend not only upon the improvements made in the service, but also upon the energy and skillfulness of the efforts made to sell it—upon the way it is priced, advertised and otherwise presented for public favor.

The problem of what passenger rates will produce the largest volume of passenger earnings is not simple, because the gross earnings secured depend also upon frequency and other factors of service. It is at least

interesting, however, if not significant, that the southern and western lines have made greater reductions in their rates within the last two years than the eastern lines, and have increased their gross earnings more. There was little difference in the rates in the three territories in 1933. In the first eight months of 1935 average revenue per passenger-mile of the southern lines was about 13 per cent less than in 1933, their passenger traffic was 41 per cent larger and their passenger revenue was 23 per cent greater. Average revenue per passenger-mile of the western lines was 15 per cent less than in 1933, their traffic was 31½ per cent greater and their average passenger earnings 12 per cent greater. Average revenue per passenger-mile of the eastern lines was 2 per cent larger than in 1933, their traffic only 6 per cent larger and their passenger revenue less than 8 per cent greater. These are the facts, although there are differences of opinion regarding the reasons for them.

The changes and improvements in railway passenger service that have been made, and are still being made, have aroused, and will continue to arouse, much public interest. They will result, however, in the largely increased volume of travel by rail necessary to restore passenger service to a profitable basis only if the railways collectively and individually do much better advertising and selling of their service than they have done within recent years, or, in fact, than they have ever done. They need, in order to beat outside competition, a revolution in selling as well as in service.



Reduced Rates Continue to Attract Passenger Business

Railroads of Western and Southern districts, where 1934 upward trend is continuing through this year, are generally satisfied with results of basic fare cuts

THE demand for railway passenger service is highly elastic. Fare reductions have so repeatedly and conclusively demonstrated their ability to bring substantial increases in business that there remains, among railway executives, no difference of opinion as to the wisdom of developing the travel market through rate concessions. They do, however, differ as to what specific market-exploitation policies are most likely to bring to their respective roads the maximum possible revenues from passenger operations. Thus there is the present set-up, with differing bases of fares and rate policies prevailing in each of the three territorial districts into which the country's railway lines are grouped.

The railroads of the Eastern district have adhered to the basic passenger rate of 3.6 cents per mile and Pullman surcharge originally established in 1920; the railroads of the Western and Southern districts have, since December 1, 1933, experimented with lower basic fares, and have substituted for the Pullman surcharge a differential between the basic fares for tickets valid in coaches and those valid for Pullman travel. The present mileage basis of fares in the Western district is: In coaches—2 cents one-way and 1.8 cents round-trip; in Pullmans—3 cents one-way, 2.5 cents round-trip limited to six months, and 2 cents round-trip limited to 10 days. The Southern district mileage basis is: In coaches—1.5 cents one-way or round-trip; in Pullmans—3 cents one-way, 2.5 cents round-trip limited to six months, and 2 cents round-trip limited to 15 days.

There is, of course, nothing novel about the foregoing set-up because differing passenger-rate bases were the rule in the pre-war years—fares did not become generally uniform throughout the country until the 3-cent-a-mile basis was established in 1918. The 20 per cent increase in 1920 brought the 3.6-cent rate and the Pullman surcharge which prevailed as the country-wide basis until the Western and Southern departures of December 1, 1933.

During the 'Twenties, however, and especially after the coming of the business depression, the railroads experimented widely with special rates in their endeavors to halt the decline of passenger traffic, which, wholly aside from the adverse effect of the depression, was being diverted in increasingly-alarming proportions to the private automobile and common-carrier bus. The extent of this decline, in its cumulative effect, is indicated strikingly when passenger traffic statistics of 1923 and 1933 are compared.

Traffic Losses from 1923 to 1933

In 1923 the Class I railways reported gross passenger revenues, excluding those from commutation traffic, of \$1,077,456,400; the comparable 1933 figure was \$282,375,200, a decline of 74 per cent. Meanwhile the number of non-commutation passengers carried declined from 539,467,400 in 1923 to 160,861,100 in 1933, a drop of 70

per cent; and non-commutation passenger-miles fell off 62 per cent or from 31,607 millions in 1923 to 12,033 millions in 1933. That much of this traffic loss was the short-haul business, peculiarly susceptible to diversion to the highway, is indicated by the fact that the average journey per passenger, excluding commuters, increased from 58.6 miles in 1923 to a peak of 76.3 miles in 1930, and had fallen again only to 74.8 miles in 1933.

Or stated otherwise, as Examiner Irving L. Koch put it in his proposed report in the Interstate Commerce Commission's pending passenger fare investigation, the per capita rail travel in the United States was less in 1933 "than in any year since 1880, having dropped from 348 miles in 1912 and 343 miles in 1923 to 256 miles in 1929 and 130 miles in 1933. The average per-capita money expenditure for rail travel in 1933 was less than in any year since 1871, having dropped from \$10.39 in 1923 to \$7.21 in 1929 and \$2.62 in 1933." And this, the Examiner continues to point out, happened while the average annual intercity travel of every inhabitant of the country was increasing from an estimated 500 miles in 1920 to about 2,000 miles in 1929 and 1,700 miles in 1933. Of the latter, he also adds, only 130 miles were by rail.

Despite the post-1923 losses, however, the railways' passenger and allied traffic, based upon the I.C.C. formula for segregating freight and passenger service expenses, continued until 1929 to produce a net from operations, i. e., a net revenue before taxes, rentals and interest. This, however, fell from \$281,784,300 in 1923 to \$128,154,700 in 1929; in 1930, the first year of the operating deficit, such loss was \$12,977,500; in 1933 it was \$111,358,100, curtailed passenger service expenses having brought it down slightly from the 1932 peak-deficit of \$112,899,200.

Special Rates Cut Revenue Per Passenger-Mile

But while refraining from disturbing the basic rate structure until the close of 1933, the railways were not unmindful of the major problems which new transport developments had injected into their attempts to bid successfully for the patronage of the traveler. Their efforts in this connection prior to 1931 were reflected in special rate concessions and excursion fares which brought the average revenue per passenger-mile, excluding commutation, down from 3.409 cents in 1923 to 3.254 cents in 1930. As the depression became more severe the resultant further decline of the long-receding passenger revenues became precipitate—\$486,089,000 (commutation excluded) in 1931 as compared with \$655,887,400 in 1930, a decline of 26 per cent; a further decline in 1932 to \$323,364,800 or 33 per cent under 1931; and a still further drop in 1933 to \$282,375,200 or 13 per cent less than 1932.

This alarming turn of events brought a wide variety of special fares and excursion rates which further whit-

tled away the average revenue per non-commutation passenger mile, bringing it down to 2.356 cents for the first 10 months of 1933. And while all of this led up to the experiments with basic fare reductions, the plunge in the latter connection did not come until the ingenuity of railway passenger traffic officers must have been well nigh exhausted by their attempts to devise special-rate tariffs which would bring additional passengers without at the same time diverting to the lower fare bases any substantial proportion of the passengers who would pay the regular fares.

"57 Varieties" of Special Fares

There were, to mention a few examples, the system-wide cent-a-mile excursions offered on specific days; the isolated experiments with rates of two cents a mile and less; the rail motor car differentials under steam-train fares; the sale of commutation tickets with options to purchase additional tickets at two cents a mile for travel on the same division; the "family bargain" fares; the combined railroad and Pullman experiments with reduced upper berth rates; the one-day round-trip suburban tickets not valid on "rush hour" commutation trains; the class rates in the West; the Atlantic Coast-to-Colorado cent-a-mile excursion; the "mystery train" excursions; the "snow train" excursions; the special holiday rates; the vacation rates; the "one plus ten" plan of round-trip fares at the one-way rate plus 10 cents; the "dollar day" plan of round-trip fares at the one-way rate plus \$1; the week-end rates; the variety of rates to the Century of Progress exposition during the summers of 1933 and 1934.

These experiments no doubt retarded the decline of traffic and revenues. Yet there can be little question that they tended to make railroad travel seem unduly complicated at a time when the fare structure of competing buses remained relatively simple. This point of view was reflected in letters to the *Railway Age*, complaining of the variety of restrictions which the railways were placing on reduced fares. It was also reflected in newspaper comment, including, for example, that of Carlton A. Shively, financial editor of the New York Sun, who wrote, for one of his 1934 columns, a paragraph of by-play on the variety of fares available over a certain route, asking, after quoting the various alternatives: "Or would it be better to stay at home or to take a bus?"

But it is easier to lower basic rates than to increase

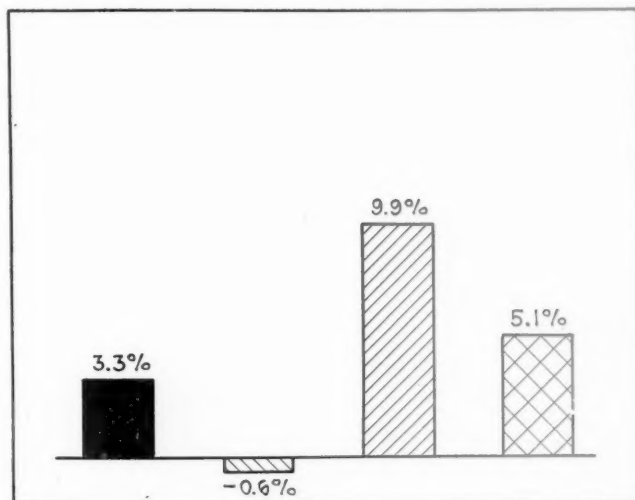
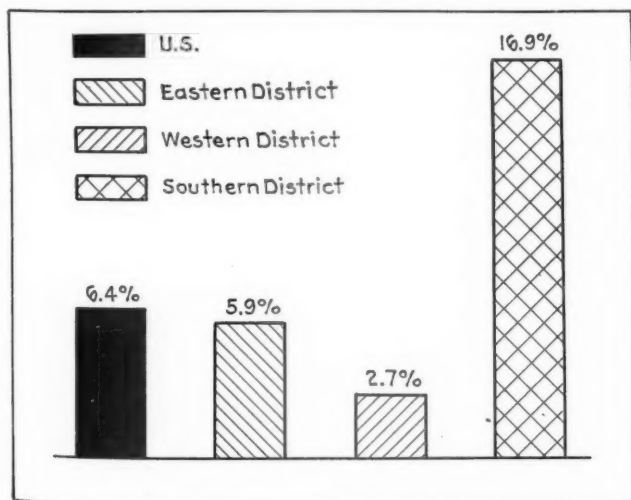
them again if the reductions bring revenue losses and thus many of these 1931-1933 rate novelties were in the nature of a testing of the water before the plunge. They built up a background of experience which enabled the Western and Southern lines to determine the respective bases upon which they should launch the basic-fare reduction of December, 1933. Nevertheless, at the time these steps were taken, the only definite evidence which might indicate the probable result was conflicting. The St. Louis-San Francisco had pioneered with system-wide coach fares of two-cents-a-mile which it inaugurated on February 1, 1931; but it permitted these tariffs to expire by limitation five months later, calling the experiment a failure as it resulted in further declines in passenger revenues. The Louisville & Nashville and smaller lines in the same territory, on the other hand, launched a two-cent-a-mile coach-fare experiment on April 1, 1933, and by September and October L. & N. passenger revenues were exceeding those of comparable 1932 months.

The Western and Southern district-wide reductions have now been in effect for nearly two years, the tariffs having been extended from time to time as successive expiration dates arrived. There has been thus far no general disposition to discontinue the experiment and in this connection the Western roads announced, on November 12, their decision to file on the next tariff-expiration date, March 31, 1936, tariffs making some of the experimental rates permanent. The Eastern lines, other than the Baltimore & Ohio, however, remain convinced that an abandonment of the 3.6 rate would not result in attracting to their lines sufficient additional patronage to offset the effect of the cut.

Southern District Makes Best 1934 Showing

The results thus far achieved by the lower bases in the West and South may be viewed in a comparison of passenger service revenues and operating statistics for the year 1933 with those of 1934 and in a similar comparison of the first eight months of 1935 with the same period of 1934.

In 1934 non-commutation passenger revenues of all roads totaled \$300,409,000, an increase of \$18,035,000 or 6.4 per cent over 1933. The increase in the Eastern district was from a 1933 total of \$159,298,000 to a 1934 figure of \$168,790,000—\$9,492,000 or 5.9 per cent. In the West the increase was 2.7 per cent or from \$86,715,000 to \$89,098,000, while the Southern increase



Percentage Changes in Non-Commutation Passenger Revenues—All Roads and by Districts: Left—1934 Compared with 1933; Right—First Eight Months of 1935 Compared with Same Period of 1934

was 16.9 per cent or from \$36,361,000 to \$42,521,000. The basic fare adjustments had driven the average revenue per non-commuter passenger-mile in the Western district down from 2.06 cents in 1933 to 1.78 cents in 1934; and in the Southern district from 1.995 cents to 1.83 cents. Meanwhile, also, special fares in the Eastern district had brought that section's average revenue per passenger-mile down from 2.65 cents in 1933 to 2.58 cents in 1934.

The 1934 over 1933 increase in non-commutation passengers carried, for the country as a whole, was 16,302,000 or 16.4 per cent; the increase in the East was 10,384,000 or 9.6 per cent; in the West it was 6,639,000 or 23 per cent; and in the South it was 9,281,000 or 38 per cent. Non-commutation passenger-miles in 1934 totaled 13,873 millions as compared with 12,033 millions in 1933, an increase of 15 per cent. The increase in the East was 9 per cent; in the West, 19 per cent; and in the South 28 per cent.

Thus it will be seen that in the first full year of their operation the basic rate reductions brought the desired results—augmented revenues from traffic increases sufficient to more than offset the effect of the cut. And this occurred in the Western district despite the fact that the showing there was adversely affected by drought conditions, especially in the Northwestern and Central Western regions. Also, the great bulk of the increased business was handled without the operation of additional train-miles. Passenger train-miles in the Western district increased in 1934 only 0.9 per cent over 1933, while the increase in the Southern district was but 1.4 per cent.

Western Results Most Favorable for 1935

For the first eight months of 1935 the railroads reported gross passenger revenues, other than commutation, of \$206,067,000 as compared with \$199,536,000 for the first two-thirds of 1934, an increase of \$6,531,000 or 3.3 per cent. This was the net result of a decrease of \$671,000 or 0.6 per cent in the East and increases

in the West and South respectively of \$5,746,000 or 9.9 per cent and \$1,456,000 or 5.1 per cent.

Revenue passengers, other than commuters, carried by all roads during the first eight months of 1935 totaled 122,897,000, a decrease of 1.21 per cent as compared with the first eight months of 1934; the decrease in the Eastern district was from 80,584,000 to 77,997,000 or 3.21 per cent and that in the Southern district was from 21,288,000 to 20,225,000 or 5 per cent. Meanwhile, in the Western district there was an increase of 9.6 per cent or from 22,520,000 passengers in the first eight months of 1934 to 24,675,000 in the comparable period of this year. Non-commutation passenger-miles on all roads were, for the first eight months of 1935, 3.3 per cent greater than for the first two-thirds of 1934; this reflected a decrease of 3.4 per cent in the East and increases of 10.7 per cent in the West and of 6.9 per cent in the South.

As was the case in 1934, passenger train-miles were again held in check; in the West the eight-months total for 1935 was 2.5 per cent in excess of 1934; in the South the increase was 2.7 per cent; and in the East, where both revenues and traffic were below 1934, there was a decrease of 1.6 per cent.

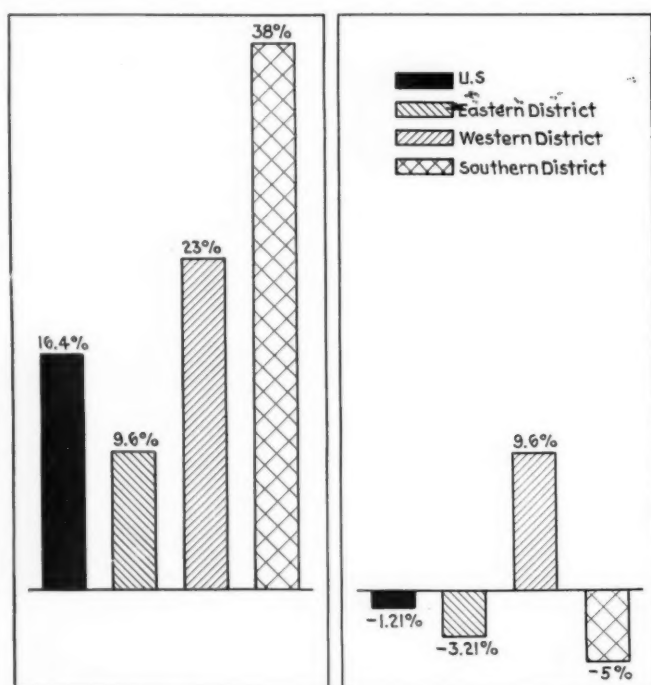
West Encouraged by Results

How do the carriers involved in the respective territories appraise these results? Their positions were recently outlined in testimony offered in the Interstate Commerce Commission's pending investigation of passenger fares and surcharges. With the exception of the Chicago North Shore & Milwaukee, which offered special evidence on Chicago-Milwaukee, Wis., fares the Western roads appeared as a group. The position of these roads, at the time of the hearings, as outlined by Examiner Koch, was that the results of their basic-fare-reduction experiment were encouraging and that the experimental fares violated no section of the Interstate Commerce Act. They nevertheless held that the 3.6 rate with surcharge, if again applied by them, would produce aggregate charges which would not be unlawful and thus they asked that the Commission, leaving them to work out the problem, make no order as to their fares. Since this stand was taken by the Western lines their relatively more favorable results of 1935 have developed.

Southern Ready to Make Low Fares Permanent

As to the Southern district several roads offered testimony, among them being the Southern Railway which was that territory's pioneer in experiments with substantially reduced basic fares. The position of this road, as outlined in its brief in the passenger fare case, is that the results obtained from its present fare basis have thus far been such as to eliminate any need for further experimentation—it intends when present tariffs expire to extend the existing bases of fares without making them subject to any expiration date.

The Southern led the way in establishing the present Southern-district basis "after a constant study of the situation for more than five years," during which time numerous experiments were made with fares ranging from one cent per mile to 2.5 cents per mile. These indicated that the 1.5-cents-per-mile coach basis was the most likely revenue producer since it had brought, on several divisions, dramatic increases in traffic at times when the Southern's passenger business as a whole was decreasing. Statistics filed with the Commission show that in 1934 the Southern's passenger revenues increased over 1933 by \$870,881 or 12.2 per cent; passengers carried increased by 56.7 per cent; and passenger-miles by



Percentage Changes in Non-Commutation Passengers Carried: Left—1934 Compared with 1933; Right—First Eight Months of 1935 Compared with Same Period of 1934

30.15 per cent. Meanwhile, passenger train-miles in 1934 were 0.58 per cent less than in 1933. In the first nine months of 1935 there was a further increase in passenger revenues of 3.7 per cent as compared with 1934 and a further decrease of 0.06 per cent in passenger train-miles.

This favorable showing in operations, Examiner Koch points out, "is due in large measure to the elimination under the present fare basis of all special excursions, with the single exception of a special fare of one cent a mile, good on Sundays within a radius of 150 mi. The Southern system reduced its special train miles from 1929 to 1934 by 43 per cent." This road attributes its favorable showing almost entirely to the 1.5-cent-a-mile coach fare which it is popularizing in widespread advertising with the slogan: "Travel anywhere, any day, on the Southern for 1½ cents a mile." That this rate has attracted short-haul traffic is indicated by the decline in the average journey per passenger on the Southern from 129 miles in 1932 and 103 miles in 1933 to 92 miles in September and 83 miles in October, 1934.

Attitude of Other Roads in South

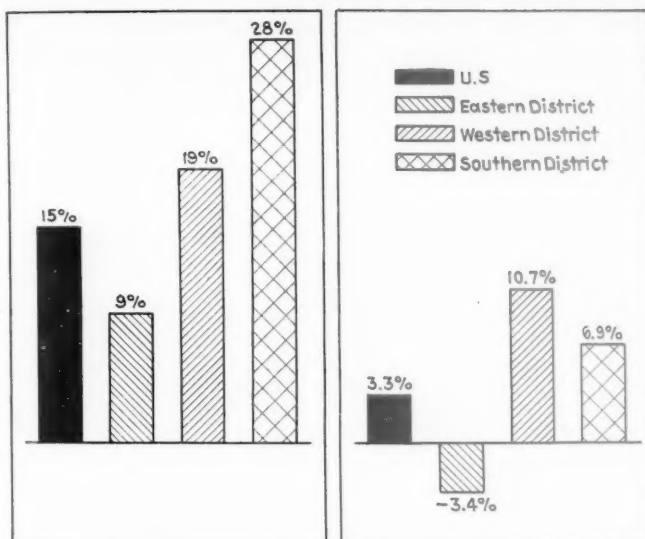
The Seaboard Air Line at the time of the hearings was in accord with the Southern that the existing fare basis throughout the South should be continued. Its results on the whole have been as favorable as those of the Southern and it has, since the present basis became effective, maintained no excursion or other special fares. The Louisville & Nashville is satisfied that the present Southern-district basis should be given a thorough trial but it wants further experimentation before going on record as to what the permanent basis should be. It is not convinced that its own two-cent experiment might not have been just as successful, or even more successful, than the 1.5-cent experiment, had the results not been obscured by the low excursion fares which were forced upon it during the period of the two-cent trials.

Examiner Koch states the position of the Atlantic Coast Line to be one of anxiety lest the present Southern-district coach basis jeopardize a reasonable Pullman basis, which it sets at 3 cents a mile, without surcharge. It fears that a spread between the coach and Pullman rates as great as that now in effect in the South might lead to demands for further reductions in the Pullman fare. It believes that a spread of 0.5 cent between coach and Pullman fares would be justified and thus it favors an experimental coach fare of 2.5 cents, which in its estimation would return greater revenue than a lower rate.

The Norfolk & Western, on the boundary of the Eastern and Southern districts, has been operating with experimental coach fares of both 2 cents and 1.5 cents a mile and is convinced that any increase over two cents would bring revenue decreases. If a permanent fare basis, differing in different regions, should be prescribed it desires for competitive reasons to have its entire system in the Southern group.

Eastern Roads, Other Than B. & O., Oppose Cut

The attitude of roads in the Eastern district, other than the Baltimore & Ohio, is that they should have primary consideration in determining what fares should be because of the fact that the preponderance of the passenger revenue is earned by them. Passenger revenues, other than commutation, in the Eastern district in 1934 were 56.2 per cent of all passenger revenues; passengers carried, 63.1 per cent, and passenger-miles, 47.2 per cent. Three Eastern systems—the New York Central, the Pennsylvania and the New York, New Haven & Hartford—reported for 1934 a total of \$127,189,546 in passenger revenues or 42.34 per cent of that for all roads;



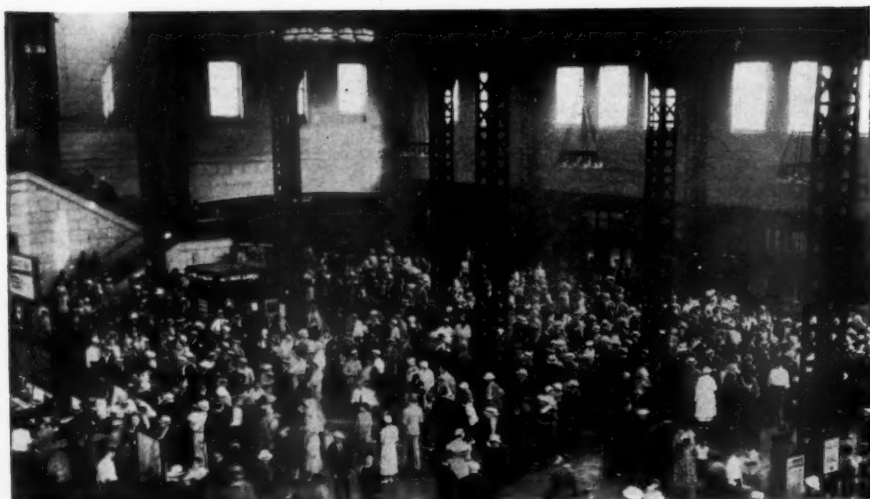
Percentage Changes in Non-Commutation Passenger Miles: Left—1934 Compared with 1933; Right—First Eight Months of 1935 Compared with Same Period of 1934

likewise these three systems carried 40.82 per cent of the total passengers that year and produced 32.72 per cent of the total passenger-miles. Thus they believe that conditions in the East are different from those in other sections and that results of fare reductions in the latter are no criteria with which to determine what should be done in the East.

They point out that the great proportion of their passenger revenue is derived from their best trains, and that the bulk of such traffic is high-class commercial business which, they believe, would not be appreciably increased by any reasonable reduction in fare; and that therefore any such reduction would be quite certain to bring a corresponding decline in revenue. They point out also that percentage increases in the Southern district is not a fair standard for them because previous losses in that district were more severe than the decline in Eastern revenues, so that any improvement was bound to reflect itself in greater percentages. Furthermore, the Eastern roads hold that a fare reduction, unaccompanied by a substantial increase in service, particularly on branch lines, would be of little avail in securing increased traffic.

The Baltimore & Ohio, on the other hand, contends that the Eastern fare basis should be 2 cents per mile one way and 1.8 cents round-trip in coaches and 3 cents one way and 2.5 cents round-trip in Pullmans. This road regards the Western and Southern results sufficiently convincing for it to assume its present attitude. It further points out that in September, 1934, only 26 per cent of its passengers traveled at the basic fare; the remainder traveled at fares ranging from 0.68 cent to 2.94 cents and 45 per cent of the September, 1934, total paid less than 1.5 cents per mile. The B. & O. is convinced that a prospective passenger's choice of conveyance is controlled by the cost of the trip and that the existing basic fare in the East "is out of harmony with economic conditions and especially with the ability of the public to pay."

Examiner Koch in his proposed report in the passenger fare investigation, which is now before the I.C.C., has recommended, among other findings, that a maximum fare basis of 2 cents per passenger mile in coaches and 3 cents in Pullmans be prescribed; that the present Western and Southern bases be found not unreasonable or otherwise unlawful; and that the Pullman surcharge be found unreasonable.



Summer Business in the Union Station, Chicago, Before Train Time

Merchandising Passenger Service Increases Revenues

Modern sales methods, where adopted, demonstrate
their merit in developing business

THAT the merchandising of recently initiated railway passenger service is responsive to the same basic principles of salesmanship that have proven effective in other channels of industry is now being demonstrated. The efforts being put forth represent in part a refinement of methods employed heretofore. More largely, they reflect a more aggressive endeavor to develop a product that is in keeping with or ahead of the demand and then publicizing it actively.

In merchandising their passenger service, the railroads are pursuing known principles of marketing. They are first improving their product by developing new equipment of modern design; they are increasing the comfort of travel by air-conditioning their cars and introducing other conveniences; they are bettering the service by speeding up trains and thereby reducing the time consumed in travel, etc. They are then adjusting their prices to those levels at which their product will sell. Finally, they are intensifying their sales and advertising programs; they are increasing the efficiency of their sales forces; and they are creating new markets by promoting special and off-season travel. The results of these modern merchandising practices are reflected in the change in trend of passenger business from a continued decline since 1920 to a steady increase in non-commutation passenger revenues since the low of 1933, culminating in an increase of \$6,531,000 for the first eight months of 1935, as compared with the same period of 1934.

Western Lines Conduct Large Advertising Campaign

In the western territory, where merchandising activities have been especially keen, non-commutation passenger revenues have increased 9.9 per cent, or from \$58,146,000 during the first eight months of 1934 to

\$64,892,000 during the same period of 1935, as compared with a 5.1 per cent increase in the southern territory and a 0.6 per cent decrease in the eastern territory.

Of the various measures that have been adopted, especially by the western lines, more extensive advertising has been responsible for a large part of the increased revenues. In May, these lines, after several years' consideration, launched the first major joint co-operative advertising and publicity effort ever undertaken by American railroads, its objective being to recapture lost and to create new passengers; its principal selling points were, in the order of their news value and importance, lower travel costs, air-conditioning, time saving, dependability, comfort and safety. This advertising program was a powerful and dramatic presentation of the news of what has been done to provide America with the finest, most luxurious, most economical and safest form of travel.

A total of \$367,945 was spent on the campaign. Of this amount, 52.1 per cent was expended in 354 western newspapers, 8.8 per cent in 50 eastern newspapers, 22.5 per cent in 5 general weekly magazines, 2.5 per cent in 14 policy publications, 6.5 per cent in farm papers, 5.5 per cent on 780 radio broadcasts from 30 stations, 1 per cent in merchandising literature and 1 per cent in the mechanics of publicity.

354 Daily Newspapers Used in West

In the territory of the western railroads, 354 daily newspapers were used in 271 cities from metropolitan centers down to trading centers with populations as low as 6,000 where the contiguous area represented a population of substantial size. In the eastern area, 50 "key" newspapers were used in 23 cities, the advertising

A Piece of Copy Used
in the Western Lines
Advertising Campaign

done in these cities being designed primarily to interest and stimulate tourist travel.

"Spot" electrical transcription records broadcast from 30 cities, all in the western area, supplemented the use of newspaper space and directed the listeners to complete information regarding the activity of the western railroads in their local newspapers and the leading national weekly magazines.

Background was created through the use of strong national weekly magazines—the Saturday Evening Post, Colliers, Literary Digest, Time and Liberty. "Educational news" was provided through a carefully planned campaign of publicity which began on March 26, and was kept up unremittingly. "Merchandising" literature, usually identified as direct advertising, was also adopted in various forms.

"Railroad Week" a Climax

The climax of the publicity effort was Railroad Week, June 10 to 15, wherein more than 300 celebrations were staged in the West. On June 10, at 8 a.m., every locomotive whistle and bell in every western city was sounded, signaling the formal opening of Railroad Week. At 1 p.m., a 7,000-mile "dot and dash pow-wow" starting from Chicago and extending through the principal cities of the West was inaugurated with ceremonies at the Union station, Chicago, veteran telegraphers who have risen to high positions in the railroad world being stationed at ancient brass keys throughout the country to exchange messages over a single hook-up of telegraph lines.

Governors and mayors in the West issued proclamations designating this period as Railroad Week and urging citizens to take part in local observance. Service clubs made railroads a feature of their meetings during the week and public schools presented interesting information regarding railroad progress to their pupils. One feature that appealed strongly to the public was an invitation extended by the western lines to the public to visit railroad shops, roundhouses and other facilities.

Typical of other activities designed to focus atten-

Mark Twain was wrong
When he said:
**"EVERYBODY TALKS
ABOUT THE WEATHER
BUT NOBODY DOES
ANYTHING ABOUT IT!"**

Western Railroads have
fixed the weather.
All Principal Trains
Air-Conditioned
"Fresh as the Breath
of Spring" While you
travel. When you Arrive



YOUR greater comfort and convenience have been provided for! Western Railroads have spent millions of dollars in materials and employment of thousands of persons—air-conditioning every principal train west and north of Chicago, St. Louis, Memphis and New Orleans. A stupendous undertaking, now completed.

You are urged to take advantage of this new travel luxury in traveling by train to any part of the West. You enjoy ideal weather at all times inside an air-conditioned western train, for temperature and air-moisture (humidity) are scientifically controlled.

You could ride through a dust storm with-

out noticing it on one of these trains. Men can wear white linens and women can travel in dainty summer dresses—air-conditioning keeps the cars so clean.

The chef could fry onions in the kitchen without your detecting it in the dining car—for air-conditioning eliminates all odors.

You can scarcely hear another train passing by—that's how quiet it is in an air-conditioned car.

On these principal western trains every car is air-conditioned—coach, chair, lounge, club, dining, sleeping and observation car. This new service costs you not one penny extra. Your dollar goes farther on Western Railroads.

With all these advantages of train travel keep cool, save money and see America this summer. Visit the mountains, lakes and beaches of the Golden West... the progressive cities and beautiful national parks... the Pacific Coast and colorful San Diego exposition. Examine monumental government projects such as Boulder, Bonneville, Grand Coulee and Ft. Peck dams.

Be thrilled by personal contact with your own country's resources and recovery. Cover as much of the West as your time permits if you want new ideas, new faith. Or concentrate on one of the many outdoor vacation areas if you want rest and relaxation.

TRAVEL BY TRAIN

10 National Parks, California, San Diego Exposition, American Rockies, Southwest, Mexico, Texas Gulf Coast, Quebec, Pacific Northwest, Alaska, North Woods and Lakes, Dode Ranches, Resorts of Every Character... See any railroad representative for routes, rates, or literature on Western trips.



LOW SUMMER FARES

Western Railroads offer the world's finest transportation at lowest cost... low round-trip summer excursion tickets on sale daily commencing May 15, with ample final return limit... All excursion tours to all points west, available at all railroad ticket offices and tour agencies.

WESTERN RAILROADS

COOL • CLEAN • DEPENDABLE • QUIET • SAFE



tion on the railways was a train announcers' contest staged from the platform of a street car at the corner of Madison and State streets, Chicago, "the busiest corner in the world." Veteran train callers representing every western railroad running out of Chicago competed for the title and a loving cup was presented to the winner. This feature was given a national hook-up over the NBC broadcasting chain. Parades, picnics and band concerts in cities throughout the West provided the grand finale of Railroad Week on June 15. At Chicago, 15,000 railroad employees and a number of American Legion drum and bugle corps paraded the loop district, requiring more than one hour to pass the reviewing stand at the city hall.

Personnel Organized for Ceremonies

To carry out the plans for Railroad Week, railway personnel was thoroughly organized. The Western Association of Railway Executives called upon the officers of each member line to appoint local representatives and these local representatives organized local committees. The committees contacted mayors, clubs, schools, theaters, newspapers and other organizations and secured their co-operation, arranged for visits to railroad facilities and provided speakers for meetings. A total of 300 joint committees and hundreds of local committees planned and executed local programs, the

effect of which resulted in an enormous volume of favorable publicity.

Some of the interesting statistics on Railroad Week follow:

Local railroad committees reporting.....	308
Meetings addressed by speakers on Railroad Week, approximately..	1,500
Number of railroad men who addressed meetings, approximately....	850
Number of communities where local merchants referred to Railroad Week in their advertising.....	198
Number of communities where local window displays were given..	297
Local radio stations co-operating, approximately.....	75
Parades held in local communities.....	157
Dances, picnics and other social gatherings, approximately.....	1,008

Results of Campaign Unusually Gratifying

That both objectives of the campaign—to recapture lost and to create new passengers—were accomplished is attested by the increase in passenger traffic and passenger revenues. In addition, the campaign was successful in several other respects. The favorable public reaction cannot be measured, but its magnitude is indicated by countless compliments on the basic ideas of the campaign. The moral effect on railroad employees likewise was great and as a result of the interest shown by the public and railroad employees, it has been overwhelmingly recommended by local committees that Railroad Week be made an annual feature.

The good-will engendered by the campaign is proved by the space devoted to railroads in newspapers, including 394 editorials in western newspapers and 9 in the



Crowds Similar to This One Congregated Along the Right of Way Every Night During the Summer to Watch the Hiawatha Pass

east, while recognition in news columns is represented by 6,807 tear sheets and clippings.

In many instances, editorial writers went into basic economics and vigorously denounced the bureaucratic methods that shackle the rail carriers. Comments were also made on subsidized phases of transportation, such as public highways, paid for in a considerable part through railroad taxes, and the construction of waterways as competitors by the use of public funds. A notable instance of this editorial attitude occurred in Kansas City, Mo., during Railroad Week, when an attempt was made to glorify the waterways, with the result that a newspaper of standing in that community, in two consecutive issues, championed the cause of the railroads on its first page, as contrasted with unfair waterway operation, and signally at a time when both celebrations were concurrent.

The benefits of this campaign may be summarized as follows:

- (a) An increase in passenger traffic and revenues.
- (b) A strengthening of the morale of the railroad men themselves, making them prouder than ever before of the industry they serve.
- (c) A definite popularizing of the rail lines with the great masses of the people, as evidenced especially in the emotional climax—Railroad Week.
- (d) The crystallization of a decidedly sympathetic

attitude on the part of countless newspapers toward private railroad management.

(e) A courageous answer to ever-increasing legislation intended to further shackle the independent operation of the carriers.

(f) A "Declaration of Independence" that should make it clear that if railroads are to be restricted and regulated, competitive forms of traffic must be subjected to the same type of supervision.

Advertising of Individual Lines Likewise Effective

While this joint advertising campaign has been the most outstanding effort ever undertaken by the railroads, the efforts of individual lines to increase the effectiveness of their advertising have also been intensified. The Union Pacific and the Chicago & North Western, for example, during recent months have laid special emphasis on advertising to merchandise the Challenger, their all-coach and tourist sleeping car train between Chicago and Los Angeles, Cal. Departures from the usual methods employed were adopted, including "spot" radio announcements, classified advertisements in newspapers, and large display placards in the more important cities. Ten radio stations were used, together with 47 newspapers. These radio announcements, advertisements and placards emphasized the low cost of travel made possible by low rates and inexpensive meals and featured the special cars for women and children carried on this train.

Likewise, the increased advertising and solicitation efforts of the Chicago & North Western-Union Pacific to sell all-expense escorted tours to the West were exceptionally gratifying this year, the business showing a gain of 85 per cent over 1934. Tours to the Black Hills alone increased 56 per cent over 1934.

The advertising and publicizing of the Hiawatha is another excellent example of individual effort. The Chicago, Milwaukee, St. Paul & Pacific introduced this train with colored advertisements in newspapers in Chicago, Milwaukee, Wis., St. Paul, Minn., and Minneapolis. As a result, several thousand persons were on hand to watch the train depart on its initial trip and to witness the christening ceremonies and broadcast. Since its inauguration, spot radio announcements, newspaper advertisements and window displays for stores have been used. The window displays are so popular that requests for them far outnumber the supply.

The Pennsylvania is another road that has elaborated upon its advertising, specializing on large display posters, which feature exceptional views of buildings and scenery similar to the artistic posters used by some foreign railways.

The New York Central has continued, in metropolitan newspapers and national magazines, its "quality appeal" advertising of the Twentieth Century Limited as an institution of American railroading. Also, this road recently made a new departure in railroad public relations work when it sponsored for "railroad fans" a "Railroad Wonder Trip" to inspect its facilities at Selkirk (N. Y.) yard and West Albany shops.

The Baltimore & Ohio in recent passenger service advertising has capitalized on the current news interest in Washington, D. C. It has endeavored to "supply the urge" to visit the Capitol through attractive displays, calling attention not only to points of historic interest but also to recent civic improvements which are creating a "new Washington." It is also advertising continually the reclining-seat coaches on its low-rate night trains between New York and Washington.

The Atlantic Coast Line and Florida East Coast have in recent seasons exploited the recreation car, with

hostesses and orchestra, which has been in operation on their New York-Miami Florida Special. The Southern has merchandised its low fares with widespread advertising of all types: Newspapers, posters, blotters, envelope fillers, folders and handbills—all carrying the simple messages "A fare for every purse" and "Travel anywhere, any day on the Southern for 1½ cents a mile."

The Maine Central in 1933 tried a house-to-house canvassing plan to sell passenger excursion tickets; the personal calls of 3,500 Maine Central employees in this connection were backed up by contemporaneous newspaper and radio advertising. The Boston & Maine, Central Vermont and Canadian National this year placed in service a club-lounge car for coach passengers of their joint Boston-Montreal train, the Ambassador.

Train Service Improved

Outstanding among the improvements in the product to be merchandised by the railways is the increased speed of trains, which has reduced the time consumed in traveling from one city to another. The most outstanding examples are the inauguration of high-speed trains between Chicago and the Twin Cities, the establishing of the streamlined "City of Portland" on the fastest schedule ever operated between Chicago and Portland, the speeding up and improving of service between Chicago and St. Louis, Mo., the placing of the Twentieth Century Limited of the New York Central and the Broadway Limited of the Pennsylvania on a schedule of 16½ hr. between Chicago and New York, and a speeding up and improvement of service between New York and Jersey City, N. J., and Washington, D. C.

The Pennsylvania, for example, on September 29, stepped up the schedules of 44 trains in its electrified service between New York, Philadelphia, Baltimore and Washington, with the Congressional, leader of the fleet, now covering the 225 miles from New York to Washington in 225 min., including six intermediate stops, thereby providing the fastest regular train service ever operated between these cities.

Coach Service Refined

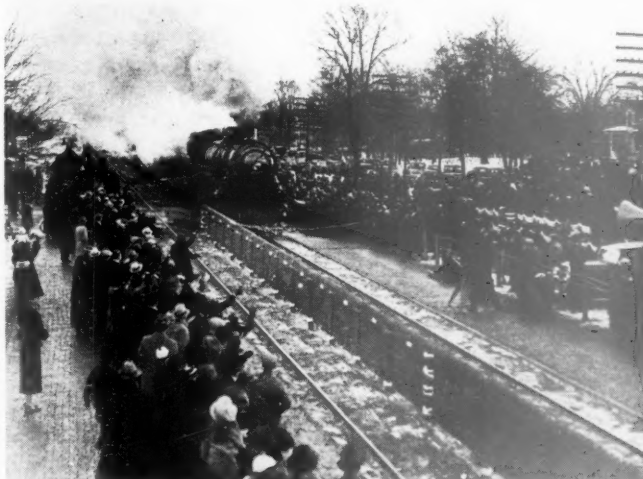
Besides speeding up service, the product of the railways has been improved in other ways. Solid coach trains with special facilities designed to attract this class of traffic have been inaugurated, noteworthy among which is the Union Pacific innovation last summer of consolidating the coaches and tourist sleeping cars of the Los Angeles Limited into one train and operating them as a second section of that train. A dining car with exceptionally low prices was added to this section, redecorated in "coffee shop style" with colorful composition-topped tables. Then followed a series of innovations in coach service which became so popular that the second section of the Los Angeles Limited became a regularly operated train which has been named the Challenger. Even after the conclusion of the heavier summer travel season and after the expiration of the so-called summer tourist rates, travel on this train exceeds that on any other Union Pacific train.

The innovations on the Challenger, all of which were initially exclusively Union Pacific features, but a number of which have since been adopted by other railroads, include, in addition to the low cost meals:

- (1) Two coaches (and additional ones if needed) for the exclusive use of women traveling alone or for mothers with small children. These cars have smoking lounges exclusively for women and enlarged dressing room facilities.
- (2) A graduate registered nurse, or stewardess, in

constant attendance and at the service of guests on the train without charge.

- (3) Porter service throughout the train.
- (4) Prohibition of tip acceptance by "red caps" handling hand baggage of coach passengers.
- (5) Elimination of the "penny-in-the-slot-machine" drinking cups and installation of drinking containers available without cost.
- (6) Free pillow service for all coach passengers.
- (7) A new lighting system providing for the dimming of lights throughout the train during sleeping hours, separate smoking lounges being available in each car for those who may wish to remain awake.
- (8) Pouching of all tickets by conductors in the same manner as on Pullman trains, thus avoiding troubling or annoying passengers until they reach their destinations.
- (9) Elimination of the calling of stations during sleeping hours, passengers due to leave the train being individually awakened by trainmen to avoid disturbing other passengers.
- (10) Conversion of dining cars, during non-meal-



As a Result of Merchandising, Many People Were Present to Watch the "400" Break the Tape at Glencoe, Ill., on Its Initial Run

serving hours, into a lounge and recreation cars for cards, service of refreshments, etc.

- (11) Every car, including the dining car, completely air-conditioned.
- (12) All coaches of the "de luxe" type with reclining and adjustable seats.
- (13) Train operation on same schedule as Los Angeles Limited.

So far as practical these innovations are being extended to other Union Pacific trains carrying coaches and tourist sleeping cars. In such other trains the low cost meals are being provided by the installation of a compact, newly designed steam table in the coaches from which tray service of meals at passenger seats is available. Air-conditioning, de luxe type coaches, free drinking cups and other facilities have already been provided on all trains.

It Costs Less to Eat

Another improvement in product has been the development of low cost meals for coach passengers. When the Union Pacific consolidated the coaches and tourist sleeping cars of the Los Angeles Limited into one train as a second section and added a dining car, it initiated three meals a day for 90 cents—breakfasts at 25 cents, luncheons at 30 cents and dinners at 35 cents. A limited

number of a la carte items were also provided at correspondingly reduced prices—for example, coffee at 5 cents per cup, milk at 5 cents per bottle and pies at 10 cents. Special items were provided for young children.

Aside from the instant popularity of these low cost meals with passengers, it may be noted also that the net revenue per meal accruing to the company on these dinners is higher than the corresponding figure on meals served on dining cars on other trains. Following the introduction of this service on the Los Angeles Limited it was later extended to the Columbine, the Pacific Coast Limited, the Portland Rose and the Mountain Blue Bird. The Chicago & North Western, over which these trains are also operated, established the same low cost meals on its Corn King Limited and Ashland Limited.

Another expedient to popularize dining car service has been initiated by the Pennsylvania which has established off-hour dining car service on all coach trains, whereby dining car stewards, after determining when the parlor and sleeping car demand will occur, invite coach passengers to partake of special menus at lower prices in the dining car before and after the rush period. Also, the Baltimore & Ohio has introduced, on its Royal Blue, the tavern car where low-priced meals may be had.

The Chicago, Milwaukee, St. Paul & Pacific is featuring low cost meals, called Chef's Selections, on the Olympian, 50 cent luncheons and 65 cent dinners on the Hiawatha, and sandwich service in all coach trains carrying dining cars. Luncheons and dinners under the Chef's Selections include meat or fish, vegetable, potatoes and a beverage served in dining cars. Under the sandwich service arrangements, sandwiches are 10 cents, coffee 5 cents and pie, etc., 10 cents. Unlike most dining car revenues, those of the Hiawatha showed a profit during June and July, revenues amounting to \$17,263 and expenses to \$14,884. While part of the profit is attributed to the serving of meals, much of it is due to the revenues from the bar.

The Chicago, Burlington & Quincy has developed economy meals which are served from trays in coaches, chair and tourist cars on the Aristocrat, the Overland Express, the Ak-Sar-Ben, westbound, and the Colorado Limited. Scrambled eggs and bacon, rolls and beverage for breakfast cost 25 cents with 5 cents more for fruit; meat, potatoes, bread and beverage for luncheon cost 30 cents with 5 cents more for dessert. A la carte tray service provides for sandwiches at 10 cents, coffee at 5 cents, beverage at 5 cents, fruit at 5 cents, pie at 10 cents and ice cream cones at 5 cents.

On the Atchison, Topeka & Santa Fe it is now possible to secure meals at eating houses enroute for from 25 to 55 cents. A 40 cent breakfast is featured with other selections at 35 cents and 25 cents. A 45 cent luncheon is supplemented by one for 40 cents and another for 35 cents, while a 55 cent dinner is accompanied by one for 45 cents and another for 40 cents. In addition, the lower priced meals tried out on the Ranger have been extended to the California Limited and the Grand Canyon Limited with breakfasts for 50 cents, and 75 cents; luncheons, 90 cents; and dinners, \$1.25.

Winter Sports a New Market

To create additional markets, railways have co-operated in stimulating winter sports. In December, 1933, the Chicago & North Western, in an effort to create travel during the winter, began operating all-expense tours to the North Woods of Wisconsin. Similarly, "snow trains" were introduced to the New York metropolitan area last winter by the New York, New Haven & Hartford; the West Shore; the Delaware, Lackawanna & Western and the Erie, facilities for all winter

sports being provided while the trains remained parked and open to the excursionists throughout the day. More than 3,000 persons patronized three of these excursions on the New Haven and the West Shore. This winter the Chicago & North Western and the Union Pacific will operate escorted tours to California for the first time since 1930, including a 16-day Christmas and New Year holiday tour and 21-day tours in January and February.

Solicitation Further Improved

While the product offered the traveling public has thus been developed and perfected, efforts to increase further the efficiency of solicitation have also been made. The Pennsylvania, which for a number of years has encouraged college men to enter its employ, started another class of cadets this year. Under this plan these men are assigned to various departments during their period of training and are eventually brought into the general offices, some in the passenger department. To increase the alertness of its solicitation forces, the passenger department of this road for a number of years has followed the practice of holding monthly district sales meetings wherein the men exchange ideas and discuss unusual problems. These meetings are supplemented by literature sent to the salesmen which answers questions arising during the course of business and disseminates sales information. To increase the versatility of its passenger department salesmen, this road for a number of years has moved them from one office to another to acquaint them with other territories and other offices of the railroad, often assigning them to special solicitation projects in communities. Also, salesmen in city ticket offices are often taken on tours to other cities, a guide accompanying the party to describe important points enroute and at the destination and to explain the railroad station facilities in other cities.

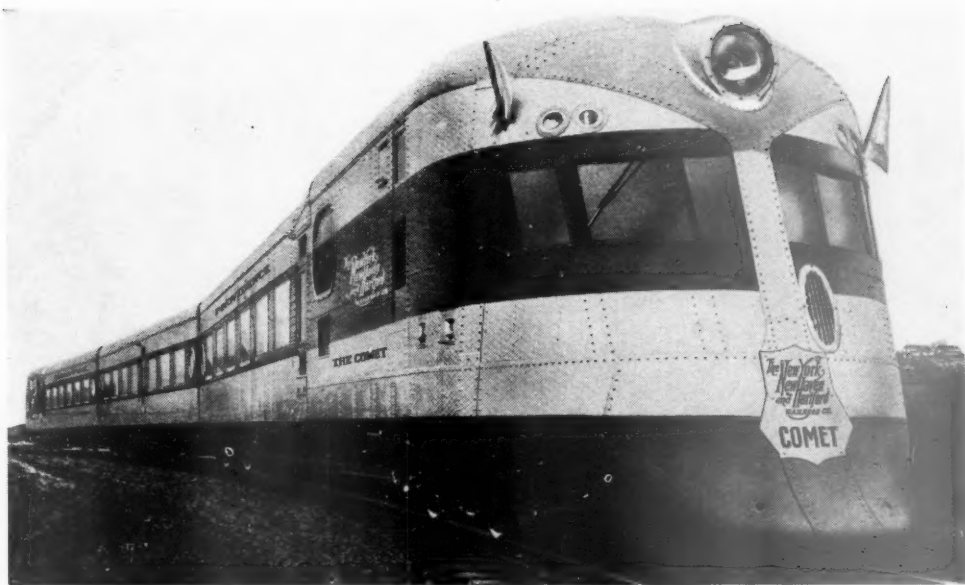
The passenger department of the Chicago & North Western has likewise laid special emphasis on the improvement of solicitation. One practice which it has employed during the last two years is that of sending periodical "friendly talks" by the passenger traffic manager to the solicitation forces. These educational talks, printed on yellow paper by request of the men so that they can recognize them readily in the mail, cover such topics as When They Come to the Counter, Concerning Canned Courtesy, On Doing the Best You Can, and He Got the Business, and are designed to improve the morale of the men by explaining discouraging daily routines and experiences.

In order to encourage salesmen to submit any ideas they may have in mind for the improvement of the North Western's passenger service, the traffic manager recently offered three prizes of \$25, \$15 and \$10 for those ideas and suggestions which possessed the greatest possibilities as potential business builders. The numerous ideas received are now being studied by a committee of three impartial persons from outside the organization.

Summary

In summary, the refined methods of merchandising employed by the railroads have resulted in an increase in passenger revenues. Only a few examples of these methods can be cited here. While these not radically different than those that have been used by the railroads for many years, they include all the principles of present-day marketing. The products has been improved, the price has been adjusted so as to move the product, new markets have been created, sales efforts have been stimulated and through advertising the product has been publicized.

The "Comet" Makes 44 Miles in 44 Minutes—Twelve Times a Day



Mile-a-Minute Trains Capture Public Imagination

Well-publicized novelty and speed are bringing passenger traffic back to the railroads

DURING the last two years, as never before, the railways have been dramatizing their passenger service. New trains, some of revolutionary design, have been flashing across the country in remarkably well publicized record runs, and have entered regular service at speeds of a mile a minute or better.

Traffic and publicity officers have labored aggressively to bring these trains to the attention of the public; operating officers have established splendid records of on-time performance with absolute safety. The result has been that passenger trains are again "hot news," capable of making the front page, and millions of lines of newspaper and other publicity for the railways have resulted. Public approval and patronage have followed this dramatization, and, under proper stimulus, should continue indefinitely.

It is the purpose of this article to trace the results attained by these high speed trains not only from the standpoint of the traffic developed, but with regard to the operating problems and costs as well. The history of these trains shows that their success is not a mere flash in the pan. There have been, of course, many novelty riders in the early days of each of the trains, but steady, regular business has followed, and patronage shows no signs of diminishing, even where competition is keen, as for example, between Chicago and the Twin Cities where four daily mile-a-minute trains are operated by three railways.

Trains Attract Immediate Attention

From the first announcement of the new type trains by the Union Pacific, followed a few days later by the Burlington, train speed has captured and held the public imagination. The nation-wide tours made by these

trains, their exhibition at the Century of Progress, and the tours and exhibitions of the trains of the New Haven, the Boston & Maine-Maine Central, the Chicago, Milwaukee, St. Paul & Pacific, the Chicago & North Western, the Gulf, Mobile & Northern and the Alton-Baltimore & Ohio, were attended by immense crowds, as have similar exhibitions of the Pennsylvania electric locomotives, the New York Central streamlined steam locomotive and the Santa Fe Diesel locomotives. As a result of these exhibitions and of the record runs that were made, public interest in railroading was enormously enhanced, and passenger traffic began an upward course for the first time in many years.

Union Pacific Trains

When the Union Pacific announced its purpose to pioneer in the construction of streamlined trains for passenger service, it frankly stated its plans to conduct a series of experiments looking to the development of this radical departure for practical use. The first Union Pacific streamliner was designated as a laboratory on wheels. When it was completed the train was taken on a tour of the United States, extending from the Atlantic to the Pacific, and practically from the Canadian to the Mexican borders. It traveled over the rails of 14 different railroads in 22 different states; it crossed all the important mountain ranges of the country; it was subjected to every sort of weather condition in all altitudes up to 8,000 ft.; it was in blizzards and temperatures as low as 10 deg. below zero in the east and nearly 100 deg. above zero on the Pacific coast; it experienced snow, wind, rain and dust storms; it operated continuously on the schedules of the fastest trains on the several railroads over which it passed; it suc-

cessfully negotiated grades and curves of all railroads.

The tour enabled the corps of specialists aboard to analyze the performance of oil-electric power, the articulation of cars, the effect of the streamline design, the type of air-conditioning adopted, the new braking system, the riding qualities, etc. It enabled a study of public reaction, which latter study continued throughout the entire summer of 1934 while the train was on display at A Century of Progress exposition in Chicago.

With the benefit of its experiments with the first streamliner, a three-car unit, the Union Pacific proceeded with the construction of its second train, intended for transcontinental service, which is the essential business of the Union Pacific. Months before the second streamliner was completed the Union Pacific announced that its plans for transcontinental service contemplated a schedule of approximately 40 hr. from the coast to Chicago. When the M-10001, now the City of Portland, was finished, a schedule of 39 hr. from Los Angeles to Chicago was worked out and the train was taken on a test of that schedule. The run was made in 38 hr. and 52 min., with refueling stops at Salt Lake City, Cheyenne and Omaha.

This train was then given the same test on various railroads and under varying conditions to which the first streamliner was subjected. Then the accumulated results of the experiments with both trains were incorporated in both trains and both trains were placed, for the first time, in regular revenue service. The second train, operating transcontinentally between Chicago and Portland, Ore., was given a schedule of $39\frac{3}{4}$ hr. Up to the time it was taken out of service, for the purpose of correcting mechanical imperfections and for the incorporation of further improvements of safety and comfort, it had a perfect "on time" performance between terminals.

The performances of its two streamliners having indicated the practicability of this type of equipment for transcontinental service, the Union Pacific is proceeding with the building of two larger units, each of 11 cars, for use between Chicago and Los Angeles and San Francisco, respectively, on schedules of $39\frac{3}{4}$ hr. or less. They are expected to be ready for service in early spring.

Burlington Trains

The first of the new high-speed trains to go into revenue service, and the first propelled by a Diesel locomotive, was that of the Burlington which began daily service between Lincoln, Omaha and Kansas City on November 11, 1934. Previously, this train had traveled

some 30,000 miles on exhibition trips, under all sorts of climatic and operating conditions. It was the first train to traverse the new Moffat tunnel route to the coast on the occasion of its opening on June 17, 1934. Its outstanding achievement, however, and one of the greatest feats in railroading, was its record non-stop run, on May 26, 1934, from Denver to Chicago, 1,015 miles, in 13 hr. 5 min., at an average speed of 77.5 m.p.h., and a maximum speed of 112.5 m.p.h.

The immediate success of the first train caused the Burlington to announce its intention of inaugurating high-speed service between Chicago and the Twin Cities, and, five months later, on April 21, 1935, the Twin Zephyrs were placed in service between these points, making one trip in each direction daily. They, too, met, with such popular approval and patronage that, on June 2, they were each placed on a round trip schedule for each train, or a total of 882 train miles per day.

On October 28, 1935, the Burlington placed its fourth streamliner, the Mark Twain, in revenue service, and this road, with a total daily mileage of high-speed trains of 2,708 miles, became the largest operator of such trains in the country.

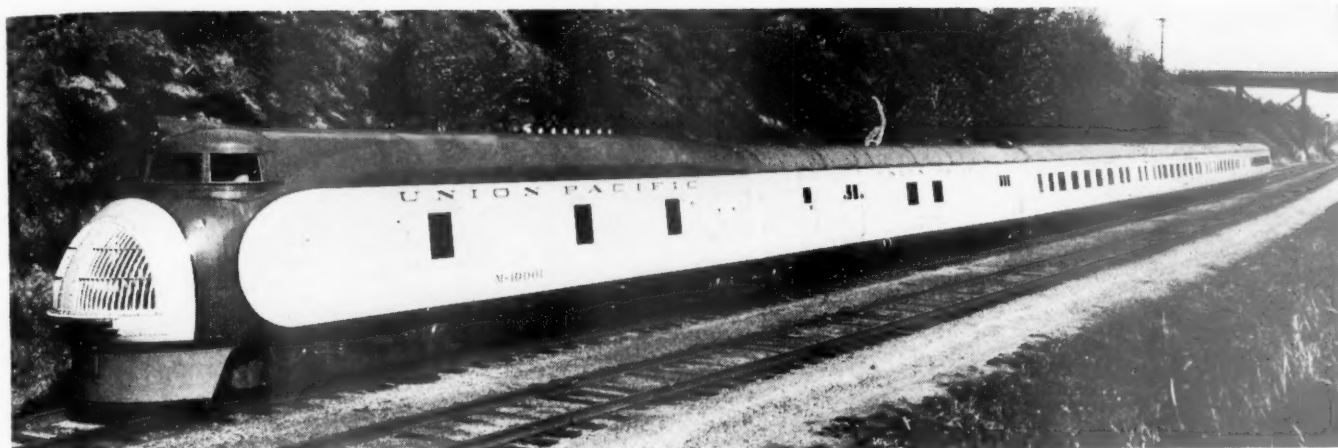
A Laboratory

Especially between Chicago and the Twin Cities, the high-speed schedules of three roads have provided an invaluable test that has been studied by all railroads and will continue to supply important and significant data for years to come. There can be no doubt that the new trains have attracted traffic to themselves, and in large volume, entirely apart from their stimulating effect on passenger traffic not only on the railroads operating them, but, through the publicity attending their operation, on the railroads of the entire country. Unfortunately for purposes of comparison, however, a number of factors enter the situation that make 1933, 1934 and 1935 figures of little value for comparative use and any comparisons based on these figures produce distorted and incorrect results. The increased traffic and the special rates to the Century of Progress Exposition in Chicago in the summer and fall of both 1933 and 1934, the lowering of fares in western territory on December 1, 1933, and the effect of business conditions on passenger traffic all make such comparisons useless for accurate deductions. The fact that all of these trains supply added service and that none of them has replaced a previously operated through train also tends to distort comparisons.

Similarly, figures given in this article as to repair costs are not strictly comparative. While such costs



The Twin Zephyrs Meet Along the Mississippi



The "City of Portland" Will Go Back Into Transcontinental Service in December on a Schedule of 39 Hr. 45 Min. Between Chicago and Portland, Ore.

have been based upon estimates of future repairs that appear reasonably accurate, any figures of this kind must necessarily be regarded as tentative until a sufficient period has elapsed to develop data from actual operation. The same is true of depreciation. On both repairs and depreciation, present figures on the new trains, however carefully prepared, are necessarily tentative and may be changed up or down when these trains have been in operation for a longer time.

In any consideration of the high-speed trains, a resume of other service is of importance in obtaining the proper perspective. The excellent highways between Chicago and the Twin Cities have resulted in much competition from buses and private automobiles. Relatively fast bus schedules, protected by modern equipment, are frequent between the two centers, while the run may be made in a day by private car by fast driving. There is also airplane competition by well established air lines.

The competition of other trains between Chicago and St. Paul, Minn., is keen. The following table indicates the number of trains other than the new trains operated by each road:

	Northbound	Southbound
Chicago & North Western.....	4	5
Chicago, Burlington & Quincy.....	4	4
Chicago, Milwaukee, St. Paul & Pacific.....	4	5
Chicago Great Western.....	1	1
Minneapolis, St. Paul & Sault Ste. Marie.....	1	1

All the new high-speed trains make the run in 6½ hrs., or 1 hr. 30 min. less than the next fastest train between these points, which means that the overall speed of the two Burlington trains averages 66.3 m.p.h., the Milwaukee 63.0 m.p.h., and the North Western 62.7 m.p.h., the variation being caused by varying distances.

The "400"

The first of the high-speed trains to be placed in operation between Chicago and St. Paul was the "400", the 6 hr. 30 min. train of the Chicago & North Western which began operation on January 2, 1935. This is a standard steam train, with a total seating capacity of 268, and is hauled by oil-burning locomotives specially converted for this service. The complete schedule of the train is as follows:

	Miles	
3:30 p.m. Leave Chicago	0	Arrive 10:00 p.m.
4:45 Milwaukee	85	8:45
5:49 South Beaver Dam	148	7:42
6:45 Adams	209	6:45
8:32 Eau Claire	323	4:57
10:00 Arrive St. Paul	408	Leave 3:30

Revenue and cost studies made by Coverdale & Colpitts, consulting engineers, during June and July (the

first two months during which all four of the new trains were running) contain the following data relative to the "400" trains:

Revenues		
	Total	Per train-mile
Passenger	\$81,130	\$1.587
Parlor car	2,223	0.044
Express	80	0.002
Dining car	8,612	0.168
Total	\$92,045	\$1.80
Expenses		
Wages of crew	\$13,123	\$0.257
Fuel oil	6,552	0.128
Transportation of fuel oil	5,410	0.106
Water, lubricants, etc.	1,015	0.020
Train supplies and expenses ..	3,261	0.064
Locomotive repairs	9,321	0.182
Passenger car repairs	5,937	0.116
Enginehouse expense	2,556	0.050
Dining car expense	11,672	0.228
Total expenses	\$58,847	\$1.151
Net revenue	\$33,198	

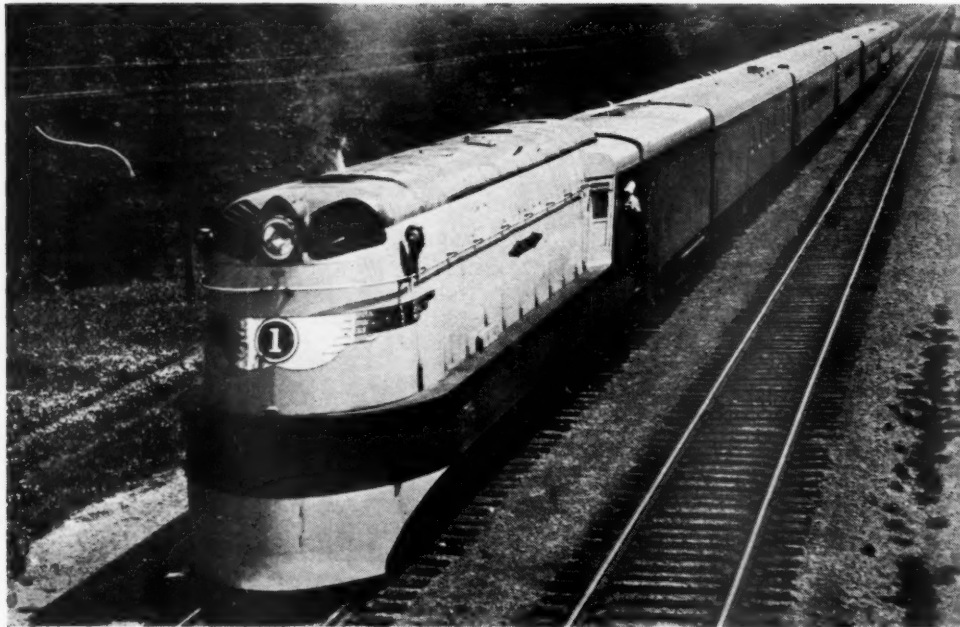
The total number of passengers carried in the two months was 15,617, an average per trip of 128, the average revenue per trip being \$754 and per passenger \$5.89. By way of comparison, 28,000 passengers were carried by this train in the first three months of its operation, before any of the other high-speed trains were installed, and the number per trip averaged 160.

While, as previously stated, there is no accurate measuring stick on the through business on any of these trains, the "400" does provide a basis of comparison between the intermediate stops of Milwaukee and Eau Claire, a distance of 226 miles. Prior to the installation of the "400," this trip required practically an all-day or all-night ride, whereas the "400" makes the distance, with two intermediate stops, in 3 hr. 46 min., or better than a mile a minute. During the first eight months of the "400's" operation, passenger revenue between Milwaukee and Eau Claire increased 78 per cent, as compared with 7 per cent for the C. & N. W. as a whole.

Based on the success of the "400," the C. & N. W. established another fast train last spring, called the Flambeau, for the summer season, between Chicago and the North Woods section of Wisconsin. Leaving Chicago at 1 p.m., on Fridays, this train reached the North Woods at 9:35 p.m., and left there at 2:40 p.m., on Sundays, arriving at Chicago at 11:15 p.m. The success of this new train is indicated by the fact that two sections were necessary on every week-end from the middle of July until after Labor Day, the end of the season.

The Twin Zephyrs

The 6 hr. 30 min. trains of the Chicago, Burlington & Quincy operating between Chicago and St. Paul are



The Hiawatha Recently Carried its One Hundred Thousandth Passenger Within Five Months After Being Placed in Service

known as the Twin Zephyrs, each of which makes a round trip, or a total of 882 train miles, per day. They were placed in service on a single daily trip basis on April 21, and, by June 2, the patronage had increased sufficiently to justify the round trip service.

The two trains are identical Diesel-powered units and each has a seating capacity of 86. The schedule of these trains is as follows:

Leave	Leave		Miles	Arrive	Arrive
8:00 a.m.	4:00 p.m.	Chicago	0	3:00 p.m.	10:59 p.m.
8:35	4:35	Aurora	38	2:21	10:20
10:08	6:08	Savanna	145	12:41	8:41
10:47	6:47	East Dubuque	185	12:01	8:01
11:31	7:31	Prairie du Chien..	239	11:13	7:13
12:26 p.m.	8:26	North LaCrosse ..	301	10:23	6:23
12:49	8:49	Miner	327	9:58	5:58
Arrive	Arrive			Leave	Leave
2:30	10:29	St. Paul	431	8:30	4:30

The operating revenues and costs of these trains during June and July were as follows:

Revenues		Total	Per train-mile
Passenger	\$106,808	\$1.017	
Parlor car	4,274	0.041	
Express	2,633	0.025	
Dining car	9,875	0.095	
Total	\$123,590	\$1.178	
Expenses			
Wages of crew	\$16,640	\$0.159	
Fuel oil	1,251	0.012	

Expenses (continued)

	Total	Per train-mile
Lubricants for power plant	1,162	0.011
Transportation of fuel oil	246	0.002
Train supplies and expenses	2,476	0.024
Power plant maintenance	6,197	0.059
Train maintenance	3,562	0.034
Dining car expenses	15,861	0.151
Total expenses	\$47,395	\$0.452
Net revenues	76,195	

The total number of passengers carried in the two months was 17,173, an average of 70 per trip; the average revenue per trip was \$507 and per passenger \$6.22.

The Hiawatha

The 6 hr. 30 min. train of the Chicago, Milwaukee, St. Paul & Pacific—the Hiawatha—is drawn by steam-powered, oil-burning locomotives of streamlined design. The Hiawatha was placed in service on May 29, and, on November 4, celebrated the handling of its 100,000th passenger.

The schedule of the Hiawatha is as follows:

	Miles	
1:00 p.m. Leave Chicago	0	Arrive 7:30 p.m.
2:15 Milwaukee	85	6:10
3:41 Portage	178	4:45
4:18 New Lisbon	221	4:10
5:09 LaCrosse	281	3:14
5:45 Winona	308	2:44
6:43 Red Wing	370	1:44
7:30 Arrive St. Paul	410	Leave 1:00



The Abraham Lincoln Has Been in Successful Operation on the Alton Between Chicago and St. Louis Since July 2

The operating revenues and costs of the Hiawatha during the June-July study were as follows:

Revenues		Total	Per train-mile
Passenger	\$165,706	\$3.215	
Parlor car	5,641	0.109	
Dining car	17,263	0.335	
Total	\$188,610	\$3.659	
Expenses			
Wages of crew	\$14,108	\$0.274	
Fuel oil	5,488	0.106	
Transportation of fuel oil	1,636	0.032	
Water, lubricants, etc.	738	0.014	
Train supplies and expenses	5,785	0.112	
Locomotive repairs	7,860	0.152	
Passenger car repairs	9,212	0.179	
Enginehouse expense	1,603	0.031	
Dining car expense	14,884	0.289	
Total expenses	\$61,314	\$1.189	
Net revenues	\$127,296		

The total number of passengers carried in the two months was 35,376, an average of 290 per trip; the average revenue per trip was \$1,546 and per passenger \$5.33.

The Original Zephyr

Turning to other points, the original Zephyr completed its first year of service between Lincoln, Neb., Omaha

These passengers traveled a total of 8,473,207 miles, or an average of 114 miles per passenger, which is an increase of 42 per cent over the average trip on the former steam trains.

During its first year on the Lincoln-Kansas City run, the Zephyr was in service 354 out of the 365 days, having been held out of service 4 days in December to replace wheels, 3 days in June to insert a fourth unit, 2 days in July for installation of auxiliary air-conditioning and 2 days in September for mechanical adjustments.

Operating and maintenance cost figures on this train are as follows:

	Total per Month	Per Train Mile
Fuel and lubricating oil.....	\$585	\$3.88
Wages	2,581	17.14
Maintenance of power—running.....	300	1.99
Maintenance of power—general.....	602	4.00
Train maintenance	635	4.22
Train supplies and expe: ses.....	262	1.74
Switching cost	187	1.25

The Mark Twain

The Mark Twain, the fourth and latest streamlined train of the Burlington and similar to the others, was placed in service on October 28, 1935, so that cost and traffic figures are not yet available. This train operates between St. Louis, Mo., and Burlington, Iowa, 221 miles,



The "400" Averages 62.7 Miles Per Hour for 408 Miles

and Kansas City, Mo., on November 11, 1935. Its present schedule is as follows:

	Miles	
8:00 a.m. Leave Lincoln	0	Arrive 7:55 p.m.
8:55 Arrive Omaha	55	Leave 7:00
9:30 Leave Council Bluffs Transfer	58	Arrive 6:25
9:38 Council Bluffs	59	6:14
9:42 Payne	101	6:07
10:25 Hamburg	108	5:21
10:35 Langdon	125	5:10
10:53 Corning	135	4:50
11:04 Bigelow	148	...
11:19 St. Joseph	187	...
11:58 p.m. Armour	205	3:47
12:28 East Leavenworth	225	3:24
12:50 Kansas City	251	3:01
1:25 Arrive Kansas City	251	Leave 2:30

This schedule provides for a speed of 60 m.p.h. between Omaha and Lincoln, while the 196 miles between Omaha and Kansas City are made in 3 hr. 55 min., including stops, or at 50 m.p.h. During this first year of its operation, the Zephyr has made 177,000 miles, while its total mileage to November 11, including record runs and exhibition trips is 209,000 miles. Over this period the Zephyr has carried a total of 74,390 passengers, or an average of 204 per day, an increase of 50 per cent over the number carried during the previous year on the steam trains which the Zephyr has replaced.

making 16 intermediate scheduled stops and 9 flag stops, on a schedule of 5 hr. 45 min., and makes a round trip, or 442 miles daily.

The Abraham Lincoln

The Abraham Lincoln, a new steam-powered train of semi-streamline design, has been in successful operation on the Alton between Chicago and St. Louis since July 2, 1935.

This train makes one round trip per day, a total of 568 miles, on a 5 hr. 30 min. schedule between the two points, or at 51.6 m.p.h., as follows:

	Miles	
8:58 a.m. Leave St. Louis	0	Arrive 9:45 p.m.
9:39 Alton	27	8:56
10:58 Springfield	99	7:40
12:05 p.m. Bloomington	157	6:35
2:28 Arrive Chicago	284	Leave 4:15

Northbound, the new train replaced a slower train that had been in service for some time, but the southbound run is additional service. The revenues of this train per train mile were \$2.55 northbound and \$1.97 southbound during September, a very gratifying show-

ing considering the fact that three other railroads are operating 5 hr. 30 min. daylight trains between the same termini.

The operating costs for the new train in September, 1935, showed the following totals:

Repairs to locomotive	\$2,168.44
Repairs to cars	1,890.05
Air-conditioning equipment	163.28
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	\$4,221.77
Wages of enginemen	\$2,161.77
Fuel for locomotive	1,263.47
Water for locomotive	111.78
Lubrication for locomotive	134.27
Supplies for locomotive	40.86
Enginehouse expense	429.34
Wages of trainmen	2,662.38
Cleaning cars	1,703.64
Heating cars	33.18
Lighting cars	47.84
Lubricating cars	60.42
Iceing and watering cars	182.16
Train supplies	54.01



The "Flying Yankee" Brought Fast Service to New England

Other expenses	95.79
Operating air-conditioning equipment	359.56
Other expenses	25.74
	<hr/>
Total	\$9,366.21
Dining car expenses	7,349.98
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Grand total	\$20,937.96

The Rebel

The only streamline trains in the South at present are The Rebels of the Gulf, Mobile & Northern, trains of a design similar to the Zephyrs, except that they are not articulated. These trains—one in each direction daily—have been operating only a short time, but the management reports that the traffic results have thus far been gratifying.

The Rebels operate in overnight service between New Orleans, La., and Jackson, Tenn., via Jackson, Miss., making approximately 50 stops in each direction on the 488-mile run. Between Jackson, Miss., and New Orleans, the trains consist of four cars, the northbound train setting out a swing coach at Jackson, Miss., which is picked up by the southbound train. The trains carry a combination sleeping-observation car.

For the first two full months of operation, August and September, certain of the operating cost figures were as follows:

Maintenance of power plant	\$0.0263
Maintenance of train, including air-conditioning apparatus	0.0581
Fuel	0.0177

Lubrication	0.0050
Wages	0.1512
Train supplies and expenses, including laundry and supplies for sleeping cars	0.0470

Trains in the East

Washington-New York service has been improved on both of the lines serving these termini. The Royal Blue, new streamlined train of the Baltimore & Ohio, has brought the railroad a substantial increase in traffic over the train it supplanted; the Washington-New York earnings of this train in August, 1935, for example, having been 50 per cent greater than those produced in August, 1934, by the previous train. The Royal Blue makes a daily round trip between New York and Washington, on a schedule of 4 hr. for the 223.6 miles, or 55.8 m.p.h.

Since the completion of the Pennsylvania's electrification between New York and Washington, the sched-

ule of its entire fleet of trains has been shortened, and the Congressional, the leader of the fleet, was put on a mile-a-minute basis on September 29, when its schedule was cut to 3 hr. 45 min. in each direction, or 225 miles in 225 min., including the six intermediate stops at Manhattan Transfer, Newark, two stations in Philadelphia, Wilmington and Baltimore. Under the new schedule, this train covers the 95 miles between Philadelphia and Baltimore in 91 min., including a stop at Wilmington. Another train of the Washington-New York fleet is on a 233-min. schedule, while three other trains are on a 240-min. basis.

In September also, the railroads operating the extra fare trains between Chicago and New York, which have been shortening their schedules progressively for some months past, placed these trains on the fastest time in their history, with a 16 hr. 30 min. schedule. This schedule requires an average speed of 54.5 m.p.h. for the 908.2 miles traveled by the Broadway Limited of the Pennsylvania, while the Twentieth Century Limited of the New York Central averages 58.2 m.p.h., for the 961 miles.

The Flying Yankee

In New England, the Flying Yankee of the Boston & Maine-Maine Central is a Diesel-powered streamlined train of the same general design as the Burlington Zephyrs. It operates 462.8 miles daily on the Boston &

Maine and 278.0 daily on the Maine Central, or a total daily mileage of 740.8. Leaving Portland in the morning, it runs to Boston, then makes a round trip between Boston and Bangor, Maine, via Portland, and returns from Boston to Portland in the evening, on the following schedules:

Maine Central			
		Miles	
5:15 p.m.	Leave Bangor	0	Arrive 4:55 p.m.
6:41	Waterville	55	3:45
7:17	Winthrop	84	3:09
7:43	Lewiston	104	2:45
8:30	Arrive Portland	139	Leave 1:55

Boston & Maine			
		Miles	
8:30 a.m.	8:40 p.m.	Leave Portland	0
8:48	9:24	Biddeford	16
9:17	10:30	Dover	48
10:25	10:30	Arrive Boston	115
			Leave 12:00 noon

On the last trip of the day the Flying Yankee runs from Boston to Portland via Portsmouth instead of via Dover, as follows:

		Miles
11:30 p.m.	Leave Boston	0
12:04 a.m.	Ipswich	28
12:15	Newburyport	38
12:38	Portsmouth	58
1:22	Biddeford	97
1:40	Portland	112

The operating costs on this train for its first three months of operation were as follows:

Operation	Items of Expense (Excluding Wages)	Cumulative	
		Amount	Cost per train mile
Fuel oil		\$931.01	\$.017
Lubrication		610.38	.011
Cleaning, icing and watering		1,167.75	.022
Train supplies		191.51	.004
Total		\$2,900.65	\$.054
Maintenance			
Inspection—motor		\$238.33	\$.004
Inspection—car		282.07	.005
Running repairs—motor		1,121.24	.021
Running repairs—car		2,011.15	.037
*Shop repairs—motor		2,181.44	.041
**Shop repairs—car		2,301.48	.043
Total		\$8,135.71	\$.151
Carrying Charges			
Interest on investment @ 4 per cent.		\$2,762.25	\$.052
Depreciation @ 2.52 per cent.		1,740.21	.032
Insurance		600.00	.011
Total		\$5,102.46	\$.095
Grand total		16,138.82	.300
Wages			
Operator—B. & M.		\$2,587.03	
Train crew—B. & M.		2,808.71	
Porter—B. & M.—11,662 mi. @ \$.012.		419.42	
Total		\$5,815.16	\$.174
Over-all cost to Boston & Maine			.474
Operator—M. C.		\$1,585.93	
Train crew—M. C.		1,669.40	
Porter—M. C.—7,089 mi. @ \$.012.		255.58	
Total		\$3,510.91	\$.172
Over-all cost to Maine Central			.472
Train miles—B. & M.		33,474	
Train miles—M. C.		20,397	
Train miles—Total		53,871	
Total miles made (including light)		54,536	
Total ton miles		5,971,693	
Total gallons fuel oil		16,569	
Miles per gallon fuel oil		3.29	
Ton miles per gallon fuel oil		360	
Total gallons lubricating oil		907	
Miles per gallon of lubricating oil		60.1	
Ratio of service miles to assigned miles		94.2	

* General repairs estimated at 4.0 cents per mile on motor.

** General repairs estimated at 4.22 cents per mile on cars.

Excessive maintenance cost on cars is primarily due to wheel changes.

Up to November 9, the Flying Yankee had carried 36,374 passengers on the Boston & Maine and 16,876 on the Maine Central, the revenue being \$104,069 on the B. & M. and \$49,691 on the M. C. A comprehensive

traffic study indicates that 48 per cent of this is new business taken from competitors, while 52 per cent is taken from other B. & M. trains.

On this train the revenues have been supplemented by excursion trips, both before the train was placed in regular service and on Sundays, when it is not necessary to keep the train in the shops for maintenance purposes.

The Comet

The New York, New Haven & Hartford operates the Comet, a Diesel-powered, streamlined train, with a power plant at each end, between Boston and Providence, 44 miles. This train, which made five round trips per day until September 29, is now run six round trips per day, except Sundays and holidays, each in 44 min., or at the rate of a mile a minute, a daily mileage of 528 miles, on the following schedule, with intermediate stops at Back Bay station in Boston, 3 min. from South Station, and at Pawtucket, 7 min. from Providence:

Leave Boston		Arrive Providence	
7:15 a.m.		7:59 a.m.	
9:30 a.m.		10:14 a.m.	
12:30 p.m.		1:14 p.m.	
2:30 p.m.		3:14 p.m.	
4:30 p.m.		5:14 p.m.	
9:00 p.m.		9:44 p.m.	
Leave Providence		Arrive Boston	
8:30 a.m.		9:14 a.m.	
11:00 a.m.		11:44 a.m.	
1:30 p.m.		2:14 p.m.	
3:30 p.m.		4:14 p.m.	
6:00 p.m.		6:44 p.m.	
10:00 p.m.		10:44 p.m.	

Coincident with the inauguration of the Comet on June 5th the fare between Boston and Providence on one-day-round-trip tickets was reduced to approximately two cents per mile. The records indicate the healthy effect the Comet has had in increasing passenger traffic between these two points where the excellence of the highways has resulted in much bus and private automobile competition.

On Sundays the Comet has been operated principally between Providence and Provincetown, on the tip of Cape Cod, at a round-trip fare of \$2. A total of 4,836 miles, including necessary deadhead mileage, was operated on these Sunday excursions from May 29 to September 8, inclusive, and 3,848 tickets were sold, bringing total revenues from excursion service of \$4,758, or \$0.983 per mile, including necessary deadhead mileage.

The out-of-pocket train mile cost of the Comet during the three months ending August 31st, 1935, was as follows:

Cost per Mile	
Repairs	\$.01175
Crew wages	.1788
Fuel oil—engines	.0281
Lubricating oil	.0074
Grease	.0005
Train supplies and expenses—cleaning	.0325
Train supplies and expenses—other	.0120
Total	\$0.3768
Miles per gallon (fuel oil—engines)	2.0
Miles per gallon (lubricating oil—crank case)	60.0

Summary

It will be seen from a study of the operating and traffic pictures of these trains given in this article that the new trains have been successful *per se*.

Mile-a-minute trains can no longer be classified as experiments. They have proved their worth as passenger traffic attractions. Whether steam or Diesel-powered, their tremendous value has been to attract the attention of the public again to rail travel. If they had done nothing else than this, their cost would have been amply justified.



Photo by Pach Associates, New York

Individual Rotating Type Seats with Reclining Backs and Lounge with Movable Furniture—Delaware, Lackawanna & Western Modernized Coach

Contribution of Equipment to Better Passenger Traffic Outlook

Features of style and comfort dramatized by light-weight articulated trains have produced a new psychology among railroad men and the public alike

It was nearly 10 years ago that attention was beginning to be directed toward doing something about passenger coaches which would make them more attractive to the traveling public. Concern was felt with the steady decline in volume of passenger traffic which had been going on since 1920 and it was the hope of many that more comfort, even to the extent of luxury, and higher standards in the aesthetic realm might be factors in turning the tide. Some progress was made in the improvement of interiors by the use of color relieved by borders of decalcomania patterns, and the so-called bucket type or bus type seats were finding their way into a few coaches as a substitute for the conventional double, walk-over type seats.

Such improvements as were being made were designed to affect through passenger traffic. Strictly local travel, with the exception of commuter traffic, had already been given up in despair, and the use of the gasoline or gas-electric motor car was being spread rapidly as a means of reducing the loss on such local services as could not be discontinued. Thus matters stood until in 1930 the Baltimore & Ohio and the Atchison, Topeka & Santa Fe injected air conditioning into the situation. What has been accomplished directly by air conditioning is set forth in another article in this issue and will not be dwelt upon here. What is of importance here is the tremendous impetus this startling new instrument for producing summer travel comfort and all-year-round cleanliness gave to the movement for improved seating and more tasteful interior decorations. The choice of colors for walls, for upholstery, and for carpets was no longer limited to those which could take the most smoke, soot, cinders and road dust and show it the least. Bold new patterns in carpets and upholstery fabrics began to find

their way into the coaches and pastel shades of lacquers and enamels to beautify their walls.

Then early in 1934 came the new trains of light weight, articulated construction, propelled by built-in Diesel-electric power plants. The first of these trains designed to provide about the same carrying capacity as could be hauled by the more powerful of the gas-electric motor cars in trains of conventional coaches, combined an even lower train-mile operating cost than the latter with an entirely new passenger appeal. Full advantage was taken of the absence of dirt in the air-conditioned interiors to break away from traditional lines in decorations and appointments. The architect and the designer were called into consultation in order that line, color combinations, appointments and lighting might all contribute harmoniously to very definite and distinctive effects. New seats were designed with comfort as the main objective. Wide windows of safety plate glass added to the pleasure of a trip. The old notion of a standard scheme of upholstery pattern and wall and ceiling treatment was discarded and effects were varied in the different compartments of the train—wall colors, window drapes (a new touch in passenger coaches), decorations, upholstery, and carpet patterns all differed. Such variety had not previously been made available except to Pullman patrons on certain de luxe trains.

Such are the interiors with which the new low-cost, high-speed trains proceeded to attract patronage in a way which has done much to change railway psychology from its defeatist attitude to one of dawning belief in a future for passenger traffic.

These trains were quickly followed by others in which the same principles with respect to comfort and interior attractiveness have been applied, although structurally

they have departed much less widely from conventional railway equipment.

That the new comfort and general attractiveness of the interiors of these trains, both the articulated and the non-articulated, even when accompanied by the spectacular appeal of their exteriors, is alone responsible for their striking success cannot be said, as other articles in this issue clearly show. That these features have achieved great popularity and have been instrumental in creating a vast amount of good will for the roads on which they are operating—indeed, for all railways—cannot be gainsaid. Where the same principles have been applied in new coaches for service in regular passenger trains and in refurnishing and redecorating old coaches of conventional structure, evidences of similar popularity have been unmistakable.

By their bold departure from precedent the new trains have, therefore, served to advance the cause of artistic and correctly comfortable interior treatment for all passenger equipment.

The demand for artistic and novel interior treatments has focused attention on lighting possibilities, which in turn have been given a much widened scope by the improved reflecting surfaces of light-colored interiors.

Lighting engineers maintain that an illumination intensity of 15 foot-candles is essential for comfortable reading in a car where there is relative motion between the reader and the reading matter. This may be more than is absolute necessary, but it undoubtedly constitutes a desirable goal. It is twice as much as that now available in most of the best lighted equipment and several times that in a large percentage of the old cars.

On some of the streamlined trains novel and pleasing effects are obtained by the use of indirect lighting. Unfortunately, this method is notably inefficient and, therefore, not well suited to use in cars on which the electric power supply is limited. In other cases, opportunities to provide adequate levels are lost, since the light is used largely for decorative purposes. High efficiency and

good distribution, even with cars having low ceilings, are being obtained with new types of direct lighting equipment which have recently been made available. If these are supplemented with some increase in the amount of electric power used, the railroads can serve their patrons with attractively lighted cars in which they can read comfortably. Some opportunity for increased power for lighting is provided by air-conditioned cars which employ relatively large axle generators. The lighting load is seldom coincident with the maximum compressor demands, since there is no heat in the car from the sun at the time that artificial lighting is required.

The contribution of the new light-weight, articulated high-speed trains has not been confined to matters of exterior and interior appearance and comfortable seating. Structurally, the designers of these trains had two main objectives in mind; namely, greatly reduced weight and increased speed. All of the special features involved in the construction are explained by their contribution toward the attainment of these two objectives. Aluminum and stainless steel were utilized, respectively, in the first Union Pacific and Burlington trains to demonstrate their weight-saving possibilities, and in the use of both materials departures were made from customary methods of construction in order to make the most effective use of the peculiar properties of the materials.

The articulation was primarily a measure for reducing weight by making unnecessary a number of trucks equal to one less than the number of body units making up the train. The reduction in the cross-section of the cars, which are somewhat narrower and considerably lower than a standard Pullman car or main-line passenger coach, was adopted because of the saving in weight possible with the smaller size car and partially because of the reduced air resistance thus effected. Streamlining was adopted in order that the attainment of high speeds might be effected with a minimum demand for power. Power plants are bulky and heavy; hence, the smaller the demand for power and the lighter the weight

Effective Use of Photo Murals on a Bulkhead—The Rocky Mountain Limited, Chicago, Rock Island & Pacific



Murals by Kaufmann & Fabry, Chicago

of the power plant the less power is required for the movement of the power plant itself and the less the power plant encroaches on the revenue floor space of the head-end body unit.

Those who were interested in proving the possibilities of the new materials, both differing widely from the ordinary carbon steel which had theretofore been the only available material, left no stone unturned to make the demonstration impressive. Thus, while the saving in weight effected by reducing the cross-section of the coaches and eliminating trucks by articulation cannot be credited to the new materials from which the car bodies were built, they have made more impressive the overall weight reductions in these trains which have made a great contribution toward convincing the public that weight per se is not essential to safety.

Weight Comparisons

Exact comparisons of weight in relation to the capacity of the various types of new trains and trains made up of present conventional types of rolling stock are not readily made. To allocate the weight of the coaches or body sections in a train to the passenger seats fails to take account of the varying amount of space utilized for railway post office, baggage and express service. Probably the best comparison that can be made is on the basis of lineal foot of train length. Including the power plant or locomotive in the weight and length of the trains, the light-weight articulated trains with built-in Diesel-electric power plants weigh, per lineal foot, about 1,000 lb. The non-articulated trains of the Baltimore & Ohio and the Chicago, Milwaukee, St. Paul & Pacific weigh from 3,000 to 3,200 lb. per lineal foot of train and locomotive. Trains made up of heavy main-line coaches and Pullman sleeping cars range in weight from about 2,300 to 2,600 lb. or more per lineal foot. Here the weight depends considerably upon length of the train behind the tender. The longer the train the lower the unit weight because of the greater length over which the weight of the locomotive is distributed.

Excluding the weight and length of the power plant or locomotive, the weight of the revenue producing portion of the light-weight, articulated trains lies approximately between 600 and 700 lb. per lineal foot. Similarly, the weight of the new non-articulated trains, in which considerable reduction in weight has been effected in the car structures, lies approximately between 1,300 and 1,400 lb. per lineal foot. Present standard heavy equipment will usually fall within the range of 2,000 to 2,200 lb. per lineal foot of train length behind the tender.

The elimination of the articulation feature in the light-weight, high-speed trains, without other changes than those necessary to provide for the additional trucks, the drawbars and diaphragm connections between the body units, would increase the weight per lineal foot of revenue space, exclusive of the power plant, by about 200 lb. per lineal foot, an increase lying roughly between 25 and 33 per cent.

The new trains have demonstrated the practicability of lighter weight in passenger equipment and there are already in service more than 130 passenger coaches in which, either by the use of special high-strength alloy structural steels or special methods of construction, the weights have been reduced approximately one third below that of conventional equipment of similar capacity. These weight savings are effective in reducing train resistance throughout the entire speed range, a matter of importance with the increasing demand for higher speeds.

Other factors which have entered the picture to influence the smoothness of passenger-train operation are the roller bearings and the tight-lock type of coupler.

Roller bearings, the use of which on passenger equipment has been spreading steadily for the past ten years, are of particular value because of the reduction in starting resistance which they effect. The starting resistance of plain bearings, particularly after having been standing long enough to become cold, may be as much as seven to ten times that of roller-bearing journals under the same conditions. This is of particular value in reducing rough handling in starting trains and in reducing the starting traction demands on motive power. These bearings have also been effective in increasing reliability of passenger equipment under all weather conditions by cutting down the tendency toward hot boxes. These factors, with the reduction in passenger-car lubrication cost, have given the roller bearing a definite place as a part of modern passenger rolling stock.

The Tight Lock coupler eliminates one source of completely uncontrolled slack between coaches—a factor contributing to the achievement of riding qualities in trains made up of separate coaches comparable in steadiness to that of trains of the articulated type. The simple solution of the connector problem which these couplers



Widely Spaced Individual Reclining Seats of the Rotating Type—The Hiawatha, Chicago, Milwaukee, St. Paul & Pacific

offer expands the possibilities for inter-communication for purposes of control, power distribution and signal communication.

An attempt at this time to determine separately the influence of such new factors as weight reduction in passenger-equipment construction on the cost of train operation would produce no useful result. Where weight reduction has been most pronounced it is associated with other factors which must share with it in the production of low train-mile costs. To the extent that weights of passenger coaches are reduced the ultimate evaluation of economic value must to a considerable degree depend upon the effect on maintenance cost of the materials and methods of construction employed in effecting the reduction in weight.

Of greater immediate value, however, is the fact that all of the factors which characterize modern passenger equipment have contributed to restoring public interest in the railways and that some, at least, of that renewed interest is reflected in improved passenger traffic and revenues. In the new outlook toward an expanding passenger traffic methods for increasing the revenues must take first place and questions of reducing expenses second place.

Air Conditioning of Major Importance in Attracting Traffic

Passengers have been educated to expect comfort and cleanliness—Air conditioning has made it possible to meet these expectations

SINCE the first air-conditioned passenger car was placed in service over five years ago there have been approximately 5,700 cars equipped at an expenditure estimated to be above 25 million dollars. The greater part of these installations were made in the years 1933 to 1935, inclusive. What has been the influence of this investment on passenger traffic?

The passenger traffic men seem to agree generally that air conditioning has been of major importance in attracting passengers to the railroads. Air conditioning is but one of the number of important developments which the railroads have made in the field of passenger transportation during the past three or four years and thus it is not possible to present statistical information to evaluate this facility in terms of dollars and cents.

The air conditioning of railroad passenger equipment came into prominence in 1931, but it was not until 1933 that any extensive programs of installations were made.

In fact, by the end of that year a total of only 648 cars had been equipped. By the end of 1934 over 2,500 railroad and Pullman cars had been air conditioned, and estimates indicate that this total will have risen to around 5,800 by the end of 1935. Approximately 43 per cent of the air-conditioned cars in service in the United States today are owned by the various railroad companies, the remainder—3,233 cars—are owned by the Pullman Company. Of the railroad-owned cars about 41 per cent are on roads in the Eastern District, 11 per cent in the Southern District and 48 per cent in the Western District.

The air conditioning of passenger equipment has provided the traveling public with a degree of comfort not heretofore experienced. Air conditioning has been looked upon primarily as a means to greater comfort in summer months or in continuously warm climates. The installation of air-conditioning equipment assures a supply of clean, cool air in the interior of cars when outside temperatures are uncomfortably high. Because it is no longer necessary to open windows and end doors to provide ventilation and because suction ventilators have generally been replaced by pressure ventilation, dust and smoke are excluded and outside noises reduced to a minimum. Aside from the added comfort of summer travel the installation of air-conditioning equipment provides a more efficient winter heating and ventilating system, with the result that, whereas in many cases temperature fluctuations and drafts resulted in discomfort to passengers, the more even temperature and the better distribution of clean air in air-conditioned cars now adds to the comfort and cleanliness of winter travel.

Traffic men report that one of the distinct advantages of air-conditioned equipment, from the standpoint of attractiveness to the traveler, is that of its relative cleanliness. Years ago, when railroads were practically the only means of long-distance transportation, passengers accepted the discomforts of travel as a necessary part of the journey. Within recent years the introduction of

in DOG DAYS too

Cool ★ Clean ★ Comfortable

THE
GEORGE
WASHINGTON
THE SPORTSMAN • THE F. F. V.
The Finest Fleet of Air-Conditioned Trains in the World

Chesapeake and Ohio
Lines

Original Pullman Company Standard By George Washington in 1883

The advertisement features a black and white illustration of a dog, likely a pointer, sitting and looking towards the left. Above the dog, the text "in DOG DAYS too" is written in a curved, playful font. Below this, the words "Cool ★ Clean ★ Comfortable" are displayed. The central part of the ad contains the name of the railroad, "THE GEORGE WASHINGTON THE SPORTSMAN • THE F. F. V.", followed by the claim "The Finest Fleet of Air-Conditioned Trains in the World". A small map of the Chesapeake and Ohio railroad system is shown, with various stations and lines indicated. Below the map, the text "Chesapeake and Ohio Lines" is prominently displayed, with "Original Pullman Company Standard" and "By George Washington in 1883" in smaller text at the bottom.

The Railroads Have Advertised the Advantages of Air Conditioning Extensively—An Example from the C. & O. Campaign

other forms of transport and, particularly, the development of highway transportation has taken many millions of passengers away from the railroads because it has provided, among other things, a cleaner form of travel. The traveling public will no longer accept dirt as a necessary condition of a journey and those roads which have made large installations of air-conditioned equipment have found that this new travel comfort and cleanliness has again attracted traffic to their lines.

This attitude on the part of the traveling public is exemplified in the remarks of a railroad traffic man speaking before a recent meeting of the Pacific Railroad Club. "The traveler," he said, "no longer considers air conditioning an incident to his trip; that thought is uppermost in his mind when he is planning his trip. People have definitely become air-conditioned minded; they know they can get air conditioning on some railroads and, if they cannot get it on one, they are going to another." Some travelers are known to have taken trips by rail since the advent of air conditioning who refused to subject themselves to the discomforts of the heat and dust so characteristic of summer travel before air-conditioned coaches and Pullmans were available.

In these days of traffic experimentation the railroads

(Continued on page 722)

Appeal Design in Railroad Equipment*

Merchandising interprets the modern in the product by style design—This must be done by the railroad

By Otto Kuhler,
Industrial Engineer

THE average man in the street judges a modern product by its appearance, because in many cases he is neither technically trained nor interested in mechanical refinements enough to go into the study of the product or service he intends to buy. His only yardstick is his eye and the appeal that a product may give to him through the eye. This, at the same time, is both the shortest and the most impressive way to reach him.

As very few products today have neglected this method of appeal, it must strike Mr. Average Man that standard railroad equipment has not undergone any changes in outward and inward appearance and that, therefore, it must be antiquated. This is his logical conclusion.

The dramatic appeal of the steam locomotive has always been realized by railroads. A three-quarter view of an on-rushing train with steam, Diesel or electric power is internationally the standard illustration of railroad calendars or other advertising matter. Also, we see in these illustrations an attempt to show speed by air streamers around the front end of the engine, smoke and whirling road dust.

In the first illustration we have a typical case of this type. If we have to use such undesirable attributes as smoke, leaking cylinder cocks, road dust or imaginary wind streamers to express speed, there must be something radically wrong with the advertising. The automobile here shows the way. Instead of faking into the

illustrations air streamers which do not exist, the automobile manufacturer, assisted by the industrial designer, builds these speed lines into his product.

Streamlining of steam locomotives is no longer a matter of revolution; it is a very logical matter of evolution. To the left of Fig. 2 is the silhouette of a standard American type engine of about 70 years ago; to the right, that of a modern passenger locomotive. By connecting all the most protruding points of an engine we find the streamline silhouette as is indicated by the dotted lines.

The Evolution of Streamlining

The locomotive designer, forced by the demand for more and ever more power within given clearances, had to build his engine longer and longer and the protruding points, such as stack, dome, etc., were ever more reduced. In fact, by technical evolution we arrive very closely at the ideal streamline silhouette. The old balloon-stack engine is entirely unfitted for streamlining and looks neither better nor faster for it.

Every competitor in passenger transportation, and many of those transporting goods alone, have taken advantage of sales appeal as expressed by streamlining. The aeroplane, with its high and continuous speeds, is streamlined for aerodynamical reasons and streamlined for passenger appeal inside and outside. The bus is streamlined for advertising, identification and passenger appeal. Streamlining on railroads, therefore, comes to a large extent in the field of the sales department, the passenger traffic manager and, with limitations, also the freight traffic manager.

The man in the street does not know anything about high-pressure boilers, feedwater heaters, roller bearings, etc., and, above all, he does not care. He only sees the locomotive as a steam locomotive and, if locomotive Model 1936 looks to him like locomotive Model 1916 he refuses to be impressed. Even the best and biggest advertising will fail to convince him.

Streamline freak locomotives have been built lately the world over. Most of them are badly conceived in their outline and their shrouding and covering; in most of them the inherent beauty and the "personality" of the steam locomotive is entirely lost. The very fact that the locomotive operator is reluctant to go the limit in streamlining indicates that the ultimate aerodynamic streamline form is not a practical operating form and not justified under today's and tomorrow's operating conditions in this country. Under sharp schedules, as fast operating and the desire for greater speed dictates, the engineer cannot sacrifice easy inspection and maintenance. Within the short stops the engineman has to be able to inspect the rods, valve gear, axles, etc., at a quick glance. Radical shrouding and covering of these parts would call for doors or shutters that would have

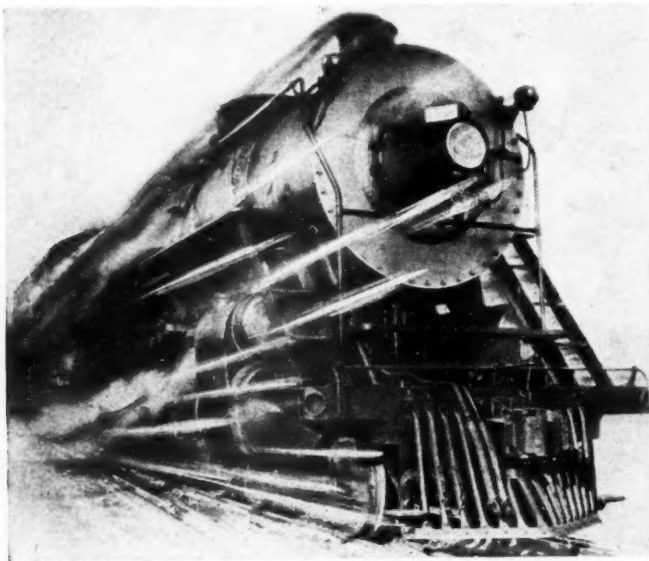


Fig. 1—Speed Indicated by Fake Streamlines Retouched into the Photograph

* From a paper presented before the New York Railroad Club, November 15, 1935.

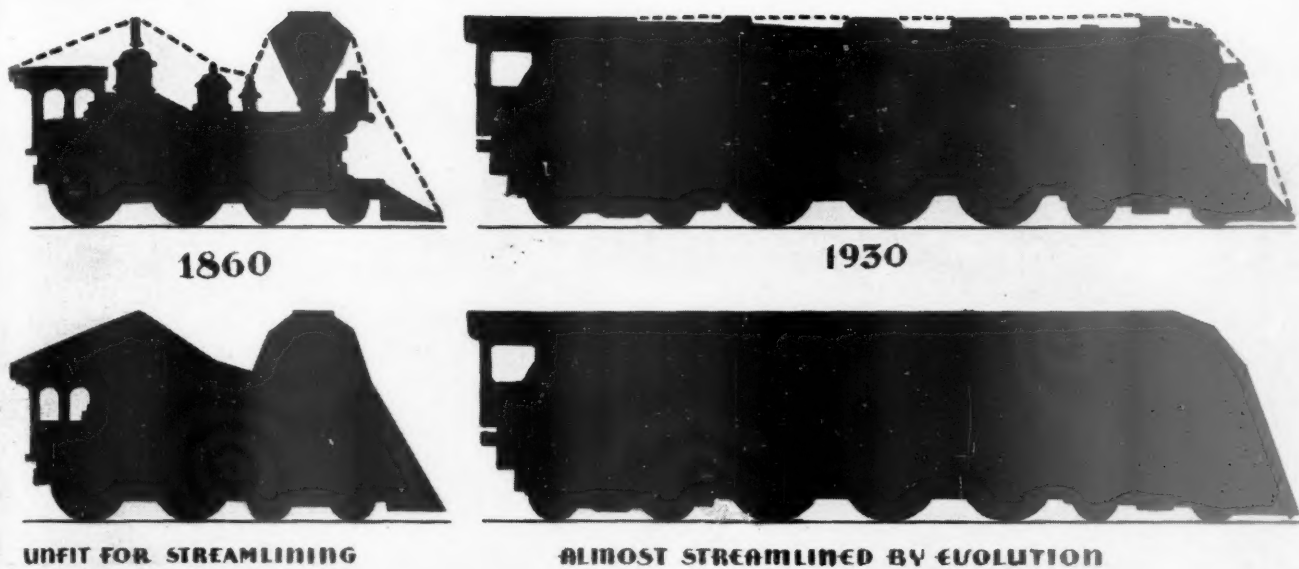


Fig. 2.—Streamlining a Logical Step in Steam Locomotive Evolution

to be opened and not only closed again, but also tightened down in order to keep them from rattling.

In no case, if correctly conceived and correctly stream-styled, does the shrouding have to be ugly. That it can be made beautiful has never been shown more spectacularly than in the performance of the new stream-styled colorful train "Hiawatha" of the Chicago, Milwaukee, St. Paul & Pacific. Between Chicago and the Twin Cities the train, in its first months of operation, carried in June 16,564 passengers; in July, 20,237 passengers and during August, 25,000 passengers. Not alone that (and this proves how the man in the street likes a steam locomotive), but after three months of operation the train is still the star performer in a free show for thousands of people who line the tracks daily, watching the "Hiawatha" go by. Pictures of this train, after six months of operation, still make the front page.

The Union Pacific streamline trains, Diesel powered, and first to be built in this country, for a while impressed on the layman the idea that steam was out and that fast rail transportation was only to be achieved with this new type of train. The Baltimore & Ohio answered this with its trains "The Abraham Lincoln" and "The Royal Blue."

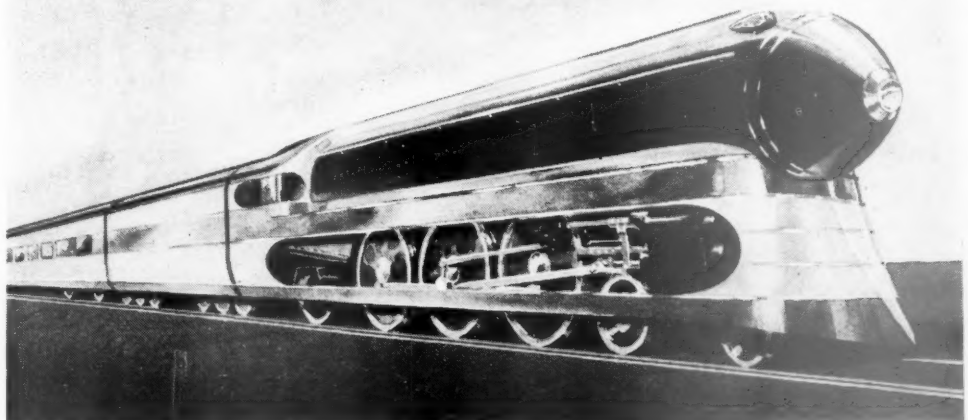
Both trains built new and on new principles along with the "Hiawatha" are steam's answer to this question of speed on rails. The worldwide publicity of these few modern developments is the public's answer that it still likes the railroads if the railroads give it what it is used to getting in other modern products and services.

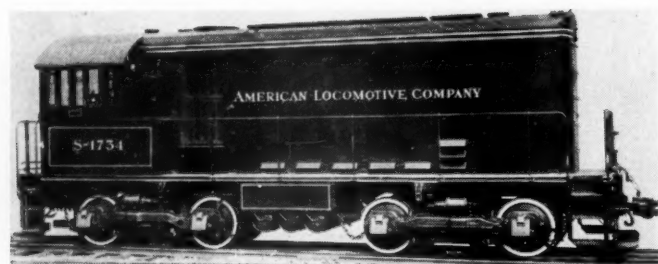
It is entirely wrong to assume that all future engines have to look like the streamline locomotive on the "Hiawatha" Fig. 3 shows a differently conceived design. In this case the characteristic features of the steam engine have been retained in the streamlining.

Good Lines Not Expensive

My first actual streamline job was not done on a steam locomotive, but on a Diesel switcher for the American Locomotive Company. When discussing with the engineers the possibilities of cleaning up this design without increasing expense in building the engine, the case looked pretty hopeless at the beginning. After a careful study, however, I found quite a few points which, without radically changing the basic shape of the engine, could be cleaned up. By striping, correct location of the

Fig. 3.—Streamstyling Which Preserves the Characteristic Form of the Steam Locomotive





Figs. 4 and 5.—Cleaning Up a Diesel-Electric Switching Locomotive by Simple Changes in Lines and the Employment of Striping

name and cleaning up several corners, recessing the headlight and relocating the bell, the impression of a modern, efficient power unit was heightened and the engine made to look longer.

Aerodynamically nothing or very little was gained by the Pennsylvania Railroad in streamlining its new electric locomotives, but they have duly impressed the public. In this case an industrial designer assisted the engineer to improve appearance, and an impressive and beautiful engine was achieved.

Significance of New Diesel-Electric Trains

As it is usual in every modern and new design, the men who conceived our modern Diesel-electric trains had the courage of their convictions and saw to it that something radically new in design was created. As we go along we find that many of the first radical intentions do not fit the complicated system of railway operation and that readjustments are necessary.

This is of very little importance to the man in the street. What he saw in the new Diesel trains was the new shape, the new color and the new lines spelling speed. It is for this reason that he looked up in astonishment, that the newspaper, newsreel and radio were all eager to co-operate in publicizing these new trains, and that all these agencies actually ventured to predict a new era in rail transportation. Here, without spending fortunes for advertising, the new idea had enough

momentum to carry itself all over the world and people flocked at every opportunity to look at these trains inside and outside. They lined the tracks to watch them pass and they are still doing it.

Just as with the streamline steam locomotive, variety on the front end of Diesel-electric trains is possible. Shape and color may be used for identification. The attempt to design something which is merely different in appearance is, however, entirely out of order from a practical point of view. Common sense engineering fitting local operating conditions should always be the guide.

This is bound to lead to different shapes. The front end of the "Flying Hamburger," aerodynamically, is probably the most perfect shape in use today. If it is not more beautiful, it is simply because no industrial designer helped the engineer to take the kinks out of it. In this country, however, an underslung bullet nose seems out of order because we have to consider unprotected crossings. We need the cowcatcher. If it does not always catch cows, it certainly is a great help in getting stalled flivvers off the track.

It was with this in mind that the front end of the new Gulf, Mobile & Northern trains was designed. That front end was not only to look different, but it also had to do a job. When working with the engineers of the American Car and Foundry Company this front end was developed with the following points in mind:

1—Easy identification, not only in contrast to the trains of other railroads, but also for identification at crossings.

2—A radius of visibility of almost 270 deg. for the engineman.

3—Strong construction against possible collision.

4—Good aerodynamics.

5—Pleasing appearance.

As far as my work was concerned the engineering demands were not a handicap in any way, but rather a stimulus which automatically led to a distinct design. When considering that cattle might get struck by the train the idea of anti-climbers led to the design of what appear as speed lines, thereby achieving a practical result and providing a logical ornamentation that tended to lighten the heavy appearance of the front skirt by really reinforcing it structurally.

For the sake of good vision the tendency seems to be to locate the motor behind the engineman. That it can be located in front of the engineman without destroying good appearance may be seen in Fig. 6.

Exterior Treatment of Passenger Coach

If we take the standard passenger coach built 20 years ago and look at it structurally, we find that there are many old structural hangovers from the wood period.

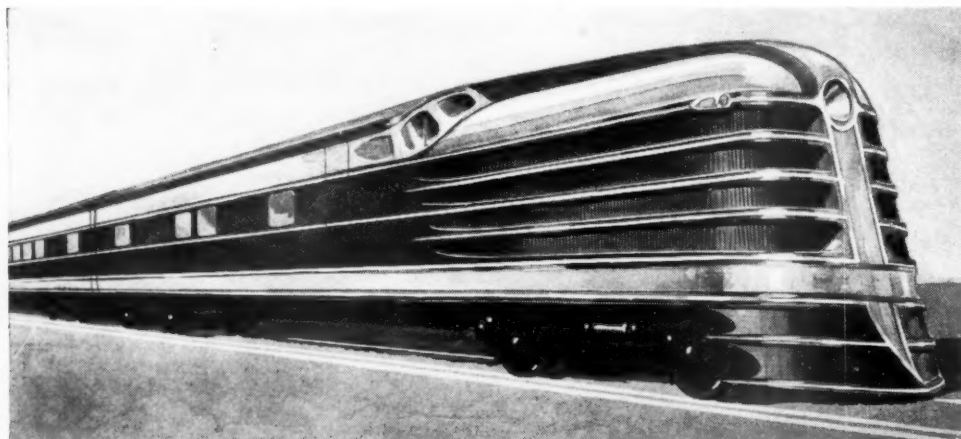


Fig. 6.—Suggestion for Mounting the Power Plant Ahead of the Operator in a Diesel-Electric Car

True, the rivet has replaced the wagon bolt; true, sheets have replaced wooden paneling, but at that date we did not even dare to show this and faked wood graining on steel sheets. We may call this the green-and-mahogany period. Much of this equipment is still in use today. It is probably this condition that led up to the wisecrack of the man in the street that the only improvement on passenger cars in the last 20 years is the slot for razor-blades in the Pullman washroom.

The railroad officer in many instances will say that this equipment is safe, is air conditioned, is comfortable and easy to maintain and that for this reason he cannot afford to scrap it. The question for his passenger traffic officer is how to make people ride this old-fashioned appearing equipment. And, as we all know only too well, the traffic officer has very little to sell with equipment that makes no impression on the man in the street.

Much of this equipment, however, can have its face

In the second picture the windows of the car, with the exception of the end windows, have not been touched, but by painting with contrasting colors they have been pulled into one panel. The horizontal lines created therewith again tend to make the car look longer and more streamstyled—more modern.

The third illustration shows the same panel treatment on the outside, but the thinner window columns have been removed. Skirting has been added below the floor level to hide battery boxes and brake gear, and this again makes the car look longer and speedier. By the application of industrial design an entirely new and modern impression can be gained from an old standard coach.

Putting Modern Appeal in Coach Interiors

Many of the new materials and methods of construction have a great and new decorative value and we do not necessarily have to hide steel or aluminum behind

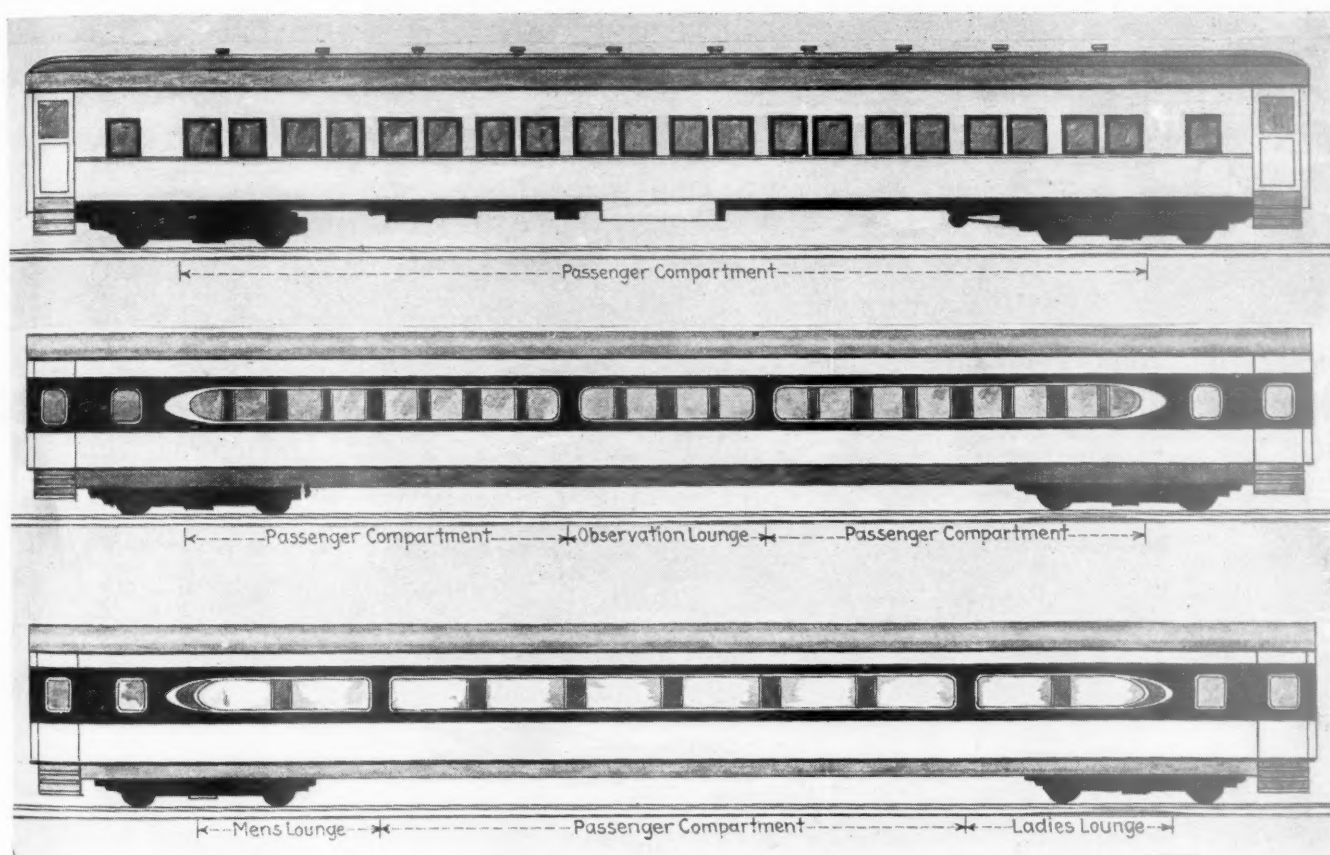


Fig. 7.—Suggestions for Modernizing a Standard Coach

lifted. As we know, there is technically nothing wrong with it and it might, therefore, deserve a little face lifting. The upper picture in Fig. 7 shows a coach as it is today. It has the typical clerestory roof, originally designed for ventilation. If we want to air condition this coach, it means additional weight for machinery, insulation and ducts. Instead of adding this weight to the already excessive load per passenger, the clerestory roof has been taken off. This at once gives a lower roof which is better fitted in its form, both outside and inside, to guide air currents without setting up whirls. Some of the weight saved thereby will be a worth-while offset to the weight added by air conditioning.

We see also an improvement in appearance, expressing more the feeling of speed which we might advertise.

fake wood graining. Safety, the all important factor, has given us new materials that, if correctly blended and used by modern artistic conception can be gayer, more cheery and more comfortable.

The standard day coach, with its endless rows of seats, its endless rows of windows, its endless baggage racks, all in stiff and stubborn uninspiring arrangement, is probably one of the best examples how this should not be done. In our rooms we have different colors. Why should we be forced to sit for hours in a drab room that has either a color that is no color at all or decidedly unpleasing to us personally? Mr., and especially Mrs., Public resent that and, therefore, they refuse to ride with us.

What goes for the color goes for the seat. As we have our preferred chair in our living room, we should

like to find it, or something similar to it, on the train—and if we do so we will appreciate it. We will appreciate it, especially if this can be done without extra charge.

Much has been said about reclining seats or, earlier, about the bucket-type seat. While they are a distinct step forward, they do not solve the problem. Reclining seats will appear comfortable for a while, but if we cannot sit in them without putting our feet against a footboard to keep us from slowly, but surely, sliding out, we cannot consider them comfortable. Some of our muscles will be under tension and complete relaxation is impossible. I believe that it takes a doctor, an engineer and an industrial designer to produce the ideal seat.

Bulkheads in day coaches have generally been thought of as a necessary evil. There are, however, opportunities to make them very attractive. Where there might be something to catch and hold our regard in a friendly

conditioning depends on air currents, we should see that these air currents are streamlined. A coach with a clerestory roof into which the air duct has been built, with a baggage rack that sticks out from the wall, and is this moment full and the next moment empty, is very poorly suited for perfect air conditioning, as all these protruding corners are bound to set up whirls.

The turtleback roof, with the center duct and no baggage racks, so far is ideal for good and unobstructed distribution of conditioned air. This type of roof is equally well fitted for lighting purposes, as it gives almost the ideal reflector in its shape.

A lot has been made of indirect lighting and, while I generally approve of it, I do not feel that it should be the only and outstanding source of light. In most cases indirect lighting can be had only at great cost due to the power demanded because of the inefficiency caused by broken rays. It therewith becomes automatically im-

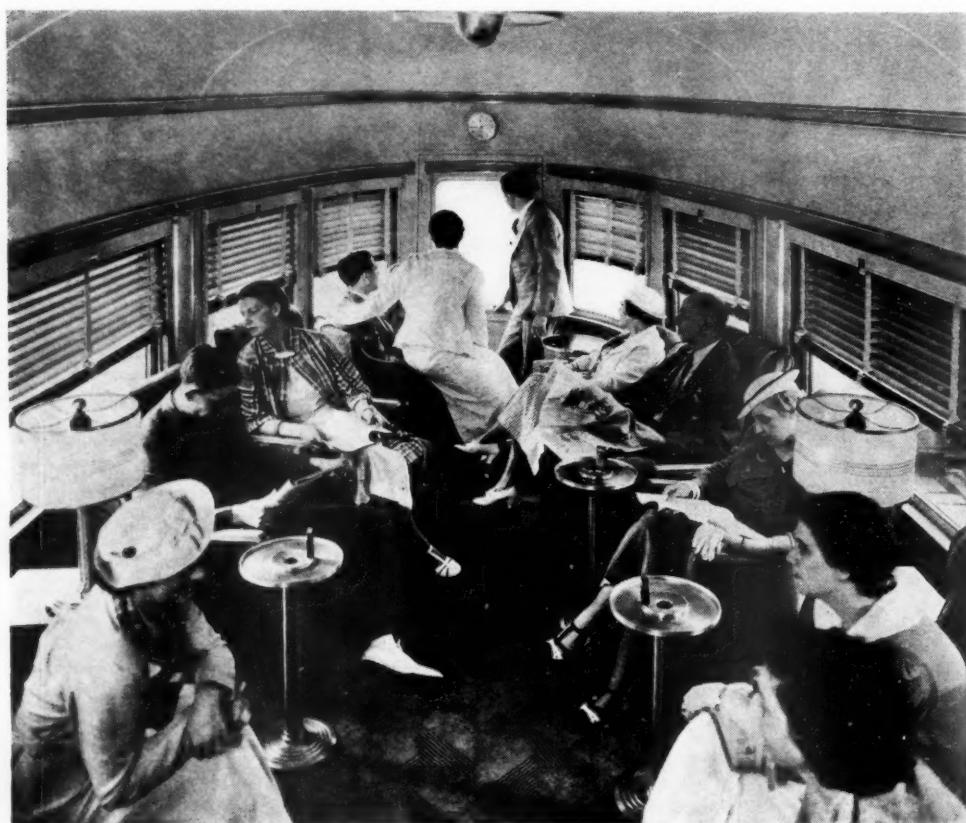


Fig. 8.—Venetian Blinds Are Employed in the Lounge of The Rebel

way, we often find no other decoration but "Spitting is unlawful in this state."

Modern architecture promotes plenty of sunlight. Shades in standard passenger coaches shut off view and sunlight. We may lock out view and sunlight from our living-room window with a shade, because we know the view too well anyhow, but to almost every passenger the continually changing panorama on a railroad trip is very charming. To enable him to shut out the sun and still have at least a part of the view, we will have to use Venetian blinds, if we want to please him—and he must be pleased.

Influence of Air Conditioning on Contours

The air-conditioned train has been a mighty step forward. To rely upon it today as an outstanding advertising medium to attract passengers would be bad business. The passenger appreciates it, as he has shown by using these trains in preference to others. As air con-

ditioning depends on air currents, we should see that these air currents are streamlined. A coach with a clerestory roof into which the air duct has been built, with a baggage rack that sticks out from the wall, and is this moment full and the next moment empty, is very poorly suited for perfect air conditioning, as all these protruding corners are bound to set up whirls.

Light as a decorative element is of extreme importance for the appearance of a train interior, especially so when combined with color. The Century of Progress at Chicago has shown us ways and means to get undreamed of effects of beauty by light plus color. The old center dome light still in use in many cars today is a copy of the old chandelier, and wall brackets go back to the fagot holder on the wall of a sixteenth century house. Both of these are definitely out in any modern train.

Our complicated system of living today has created many specialists. The lighting engineer, the window specialist, the shade manufacturer, the seat manufacturer, etc., are all at work on a modern railroad car. All work together to co-ordinate the mechanical functions of their work. To co-ordinate all these functions artistically

(Continued on page 722)

REPORT ON PASSENGER TRAFFIC

By John C. Emery*

**More sales can be made only if product,
price and methods are right. Research
and experience will show how**

EARLY this year, there was transmitted to the Regional Co-ordinating Committees, and through them to the railroads, the Co-ordinator's Passenger Traffic Report prepared by his Section of Transportation Service. In the months between then and now, this report has engaged the attention of the railroad passenger traffic executives and of many others less immediately concerned with railroad passenger earnings.

The official response to the Passenger Report on behalf of the railroads has not yet been rendered by the Association of American Railroads, acting in this instance for the Regional Co-ordinating Committees. This may be an appropriate time, however, to review the contents of the report and to discuss, to the extent that this can properly be done, some phases of the unofficial reaction to it which the Co-ordinator's Section of Transportation Service during recent months has been at some pains to elicit.

First, as to the report itself, its objectives and its contents. Under the Emergency Railroad Transportation Act, 1933, the Co-ordinator was charged with the duty, among other things, of carrying on and promoting intensive research into the possibilities of eliminating waste, and the word "waste" was construed broadly to include failure to attract traffic and obtain revenue as well as to save expense. The Passenger Report, therefore, was the outcome of a job of intensive research into the reasons why the railroads had failed to a steadily increasing degree to attract and obtain revenue from a more substantial portion of the passenger travel of the country, and into the means whereby this situation might be changed.

A Gigantic Increase in Travel

It is unnecessary to relate here how very discouraging the trend of railroad passenger business was in the years following 1920. Everyone in railroad service knows that the decline in passenger revenues was virtually uninterrupted from 1920 through 1933 and that it became very rapid with the deepening of the depression. Everyone knows also that, while railroad passenger traffic was declining, the volume of travel moving by other means, especially the private automobile, was steadily rising, and to levels far in excess of those ever known to railroad transportation.

The task of those assigned to the preparation of the Co-ordinator's Passenger Traffic Report was to determine whether the trend of travel on railroads could be

turned upward and kept moving in that direction, and to discover means by which this might be accomplished.

As the first step, the market for passenger transportation was studied, and it was revealed, by the most accurate calculations which could be made, that nearly 200 billion passenger-miles are now moving each year in non-railroad vehicles. This made it obvious that there was plenty of room for expansion of railroad passenger earnings, even if the railroads were to campaign only for a greater share of the existing business, disregarding the possibility of creating additional traffic. The business was there, if the railroads could get it.

The question was how to get it, and this was the problem which the Section of Transportation Service next tackled. It was recognized that, in any business, more sales can be made only if the product, price and selling methods—all of them—are right. So a careful study was undertaken, covering the railroads' passenger product, its price and the means by which it is sold. The advice and suggestions of everyone engaged or interested in passenger transportation were solicited by questionnaires and otherwise. And out of all the mass of statistics, experience and opinion which was collected, a broad program of action was prepared. The adoption of this program, it was held, would give the railroads the increased passenger earnings—gross and net—which they want and need. The specific nature of this program need not be repeated here. It must be generally familiar to railroad officers.

So much for the report itself. Now, as to the unoffi-

Passenger Earnings Can Be Increased

The most careful and open-minded—even optimistic—consideration should be given to the question of the actual size of the market for railway passenger service.

The passenger business, in a volume far beyond that ever known to railroads, is already here.

The passenger traffic problem of the railroads is to find a way to secure as much as possible of the nearly 200 billion annual passenger-miles now estimated to be moving in non-railroad vehicles.

The stake is large enough to justify use of railroad talent and ingenuity to win it. The job will require money, the courage to take risks and every source of producing and selling ability that the railroads can command, but it is a job which can be done and which sorely needs to be done.

* Director, Passenger and Merchandise Service, Section of Transportation Service, Federal Co-ordinator of Transportation.

cial reaction of railroad officers. This reaction has been largely and gratifyingly of a constructive sort. If there was some tendency to adopt a defensive attitude, exclusively concentrated upon the exposure of any fallacies in the report, this did not predominate, and to the extent that it did exist, was to be expected. But the general attitude was one of acceptance of the report as exactly what it was; namely, a sincere attempt to throw upon the railroads' passenger traffic problem as much light as could be generated by the most exhaustive—and, incidentally, exhausting—means.

At the same time, the report's recommendations have come in for plenty of criticism, and that not only was expected but is being encouraged. There is nothing sacred about the Passenger Report. Many of its suggestions may be unsound, but even these may suggest ideas which are better than those now entertained by the railroads on the one hand and the Co-ordinator's organization on the other.

Research and Experience the Key

The ideas and convictions about the passenger business which are held by railroad officers are based mainly upon years of experience in this business. The ideas and

Is Local Traffic "Gone for Good"?

Examination of time tables is all that is needed to establish the fact that travel by rail within many local areas of the country is now difficult and inconvenient, if not actually impossible.

A vicious circle has developed here. Traffic declines lead to service withdrawals. Service withdrawals lead to further traffic declines, and so on. If the railroad passenger business is to come back, the turn of the wheel must be reversed.

Probably the answer lies in light units of some sort, operated either on the rails or on the highways. The light rail unit shows great promise that, in addition to its extra capacity, it can be made to rival the bus in low operating cost.

convictions of the Section of Transportation Service are based mainly upon the results of the most intensive research ever brought to bear upon the passenger business. Neither experience alone nor research alone is enough. It is through the combination of experience and research that the right answer will be found. This is as good a place as any to make an earnest request for recognition of this fact.

To the extent that railroad officers have taken what might be termed a negative attitude toward the Passenger Report, this can be summed up in four sentences, which are practically literal quotations:

1. "We're already doing that."
2. "We've tried that and it doesn't work."
3. "The local business is gone for good."
4. "We can't afford that."

As to the first: "We're already doing that." There seems to have been some expectancy on the part of railroad officers that the Passenger Traffic Report would be

replete with, if it did not entirely consist of, utterly new and original ideas for the development of railway passenger traffic.

Of course the Passenger Traffic Report recommended steps which had already been taken by railroads. Of course it was not entirely original in its contents. How could it have been, when it purported to be a complete program for railway passenger traffic development? Obviously many of the traffic-development measures invoked by the railroads prior to the publication of the report were meritorious. It would have been unthinkable to omit them from the complete program, and such omission might properly have been protested by the railroads.

Ideas for the development of railroad passenger business probably come as close as anything to disproving the axiom that there is nothing new under the sun, but even they fall somewhat short of that mark. It is to be hoped, therefore, that none of the component parts of the broad program will be overlooked or deprecated simply because it is not newly minted.

Now, as to the statement: "We've tried that and it doesn't work." The question always arises as to whether the test was a fair one. If there is any one fact which sticks out of the maze of theory and conjecture surrounding the problem of passenger traffic development, it is that halfway measures will not work. Trains may be speeded up, without marked effect on revenues. Comfort may be greatly enhanced, and the cash register ring no more rapidly. Rates may be reduced without adequately stimulating the flow of railway travel. Solicitation and advertising efforts may be redoubled, to little purpose. All these steps are essential parts of the program of traffic development, but no one of them can do the job alone. Only when each part is combined with the others to make railroad transportation undeniably attractive because it is designed right, run right, priced right and sold right, will the true test be possible. Only by such a broad program can the railroads hope to win the increase in passenger business which they so badly need, and unsuccessful tests of single parts of the broad program do not deny this fact.

Now as to the claim, "The local business is gone for good." The development of local, short-haul passenger traffic is so vital a necessity, if the railroads are to come back as passenger carriers, that this statement must not be permitted to guide the future course of the railways.

Infrequent Local Service

Whether it is a case of cause or effect, it is certainly true that much of the local service now available on the railways is such as to make and keep local traffic "gone for good." Examination of time tables is all that is needed to establish the fact that travel by rail within many local areas of the country is now difficult and inconvenient, if not actually impossible.

A vicious circle has developed here. Traffic declines lead to service withdrawals. Service withdrawals lead to further traffic declines, and so on. If the railroad passenger business is to come back, the turn of the wheel must be reversed.

How satisfactory local service can be provided at a profit is a serious question. The traffic volume may never be large. The service must be frequent, and rates must be low because the competitor here is the private automobile and almost nothing else. The problem is to give the most service at the least expense.

Probably the answer lies in light units of some sort, operated either on the rails or on the highways. The motor bus has had and still has important advantages as a medium for the development of local traffic. But the light rail unit also shows great promise that in addition

to its extra capacity, especially for so-called "head-end traffic," it can be made to rival the motor bus in low operating cost. The size of crew required for light rail units is a matter of vital importance which must be worked out satisfactorily between the railroads and their employees.

The problem of getting local passenger traffic and handling it at a profit will tax the ingenuity of the railroads to the utmost. Yet the solution of this problem is considered fundamentally necessary to the proper development of railroad passenger earnings. The attitude of "It can be done!" is perhaps the first essential to a successful attack on the problem.

Finally, on the protest, "We can't afford that." This leads into the one point on which the majority of railroad passenger officers appear to be in really serious disagreement with the Co-ordinator's organization. That is as to the amount of currently non-railroad travel which the railroads, by any means, can hope to win to their service. As stated earlier, it is estimated with at least fair accuracy, that nearly 200 billion passenger-miles are now moving annually in other than railroad vehicles.

There are many railroad officers—and their conclusions merit great weight—who believe that little of this vast reservoir of traffic is within the reach of the railroads. The point is debatable, but assume for the moment that this view is correct. In 1934, railroad passenger miles were a little over 18 billions. To double this business—that is, to add to it 18 billion more passenger miles—would put only a slight dent in the current non-railroad traffic, but what a difference it would make to railroad earnings!

Passenger Recovery Need Not Await General Revival

There is a substantial basis for the belief that in the chance for increased railroad passenger business lies the outstanding chance for immediate and largely increased railroad earnings. There is no need, in this instance, for the railroads to wait upon general business revival. The passenger business, in a volume far beyond that ever known to railroads, is already here. The market is not slowly developing, but is already full-fledged.

Whether all or even a major part of the passenger travel by other carriers—private and public—can be won to the railroads by any means, is a question of relatively little immediate importance. The really important question of today is: Can even a small part of this business be secured? If it can, if the railroads can win over only 10 per cent of the currently non-railroad travel, they will more than double their 1934 passenger volume. If they can get 20 per cent of the business the other carriers now handle—and that is still only a small fraction of the total—the railroads, of course, will triple their 1934 volume, and so on.

The passenger executives must make up their minds on this question of how much additional business can be secured, through any means, by the railroads. If this volume is small, then some of the proposals of the Passenger Report would be, indeed, too expensive. But if a substantial part of the currently non-railroad travel is not beyond the reach of railroad service, as the Section of Transportation Service believes, then the costly steps called for in the Passenger Report may represent not undue expense but true economy. The most careful and open-minded—even optimistic—consideration should be given to the question of the actual size of the market for railway passenger service.

The passenger traffic problem of the railroads can be simply stated. It is to find a way to secure for the railroads as much as possible of the nearly 200 billion annual passenger miles now estimated to be moving in non-

railroad vehicles. Can the problem be as easily solved? Probably not. But the railroads have the men and the resources necessary to solve problems fully as knotty as this, and in this case the stake is large enough to justify such use of railroad talent and ingenuity as may be necessary to win it. The job will require money, the courage to take risks and every ounce of producing and selling ability that the railroads can command, but it is a job which can be done and which sorely needs to be done.



LONDON...the most exciting place in the world!

London! It thrills us even to think about it! Why, in the very name itself you can hear the thunder of the traffic as it comes down the Strand and round the fountains at Trafalgar Square! London with its fashionable shops and restaurants, dazzling illumination, gay cosmopolitan crowds, theatres, concerts, cabarets, night clubs. And all this gaiety amidst squares and streets and ancient buildings famous for all time in the history of the race.

Have you seen the Changing of the Guard? Have you watched Tower Bridge go up? Do you know the view from the top of the Monument? Have you been to the Zoo? How many of the museums have you visited? What about Richmond, Kew Gardens, Hampton Court? To get to London and back costs you only a penny a mile (three-halfpence first class) with a "Monthly Return Ticket." Travel by any train and, if you want to, break your journey on the route, both going and coming back. (You have the choice of returning by the LMS or L.N.E.R. routes.)

The following holiday guides are obtainable from LMS or L.N.E.R. offices:
 "Holidays by LMS" (6d) L.N.E.R. "The Holiday Handbook" (6d)
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British Railways Joint Advertising of a Place



Above: A Small Bus for Light Traffic Lines; Below: A Modern Unit for Long Distance Service

Motor Transport Aids Traffic Recovery

Train replacement services, scenic lines and transcontinental bus operations attract additional passenger traffic

THE passage of the Motor Carrier act has removed the last obstacle to railway participation in highway transportation and marked expansion is to be expected. Since the foregoing statement was made by a well-informed railway president, events are substantiating his conclusion, for, with regard to both passenger and freight motor transport, increased railway participation is already taking place rapidly, and is having a marked effect on the recovery of passenger traffic by the rail lines and their highway subsidiaries.

The effects of the Motor Carrier act will bring order into an industry that, while firmly established, has, at times, been a rather chaotic one, with no guiding force such as is now provided by the Act. That more and more railways will turn to the use of buses was predicted by Commissioner Eastman, who announced in New Orleans recently that the commission expects much less difficulty in applying the provisions of the Act to passenger than to freight highway carriers. It should necessarily follow that the regulation of the bus industry will become effective sooner than that of the trucking industry.

Simultaneously with the revival of rail passenger traffic, and playing a considerable part in such revival, the expansion of railway-owned passenger motor transport companies began in 1934. Since that time,

the interest of the railways in highway motor transportation has more than trebled, judging by their purchase of existing bus companies and by the creation of new bus routes by rail-highway subsidiaries already in operation.

The revived interest, dating from 18 months ago, has continued with undiminished vigor since that time, with the result that the revival in the field in this period has equaled, if not exceeded, that of any previous period. The passage of the Motor Carrier act has removed the last obstacle to the entry of railways into the passenger motor transport field—that of instability of the industry—and, since the passage of the Act, a controlling interest in the largest independent bus operating company in the country has already been purchased by one railway, another railway has bought a controlling interest in one of the largest subsidiaries of the Greyhound Lines, and many smaller projects have been consummated.

The revival of railway interest in passenger highway transportation has been general in its scope and has not been confined to any one branch of the field. Train replacement services have been increased, including an interesting experiment of replacing a mixed train with a combination bus-truck having a capacity of 13 passengers and 3 tons of freight. Other train replacement

services include the turning over of an entire suburban service to an affiliated bus company. Putting these feeder services on the highway has not only saved money in operating costs of the steam train versus bus, but has provided the main lines with traffic as well.

The large increase has been made through the acquisition of bus-operating companies either in their entirety or of enough stock to insure control and the expansion of routes by existing bus subsidiaries. It is no exaggeration to say today that the entire country is criss-crossed by a network of railway-owned bus routes.

Another form of service that has shown considerable growth this year is the provision of connecting or intermediate bus services to reach points of scenic beauty not reached by rail. Several such enterprises have been started this year and others already in existence have expanded, and, in each instance have attracted considerable long-haul tourist business to the rail lines.

Subsidiary Bus Companies

Specifically, some of the outstanding cases of expansion along these lines are cited below.

The acquisition by the Atchison, Topeka & Santa Fe of the Southwest Motor Stages marked a change to railway ownership on the part of what had been the largest independent bus operator in the country and was one of the significant developments following the Motor Carrier act. This purchase brought the Blue Motor Coach Lines, the Santa Fe Trail Stages and the Cardinal Stages under A. T. & S. F. control, as well as a half interest in the Southern Kansas Greyhound Lines.

Another outstanding development of the year is the growth of the Burlington Transportation Company, highway subsidiary of the Chicago, Burlington & Quincy. Until the spring of 1934, this company operated buses only on isolated routes, entirely in train replacement service. Beginning its through service however, with a line between Chicago and Dubuque, Iowa, this company continued its expansion until, by the first of this year, the territory between Chicago and Lincoln, Neb., was thoroughly covered by Burlington bus service. This, however, was but a forerunner of the expansion to come, for, on January 1, 1935, this company announced a tri-weekly through bus service between Chicago and Los Angeles, Cal., thus entering into active competition with the independent bus operators and with the Interstate Stages, bus-operating subsidiary of the Union Pacific and the Chicago & North Western.

This service was shortly changed to a daily schedule. During the course of the year, further expansion took place, and routes were established north and south out of Cheyenne, Wyo. Another coast route was inaugurated between Salt Lake City, Utah, and San Francisco, Cal., connecting at the former city with the Chicago-Los Angeles buses. Meanwhile, in conjunction with the Missouri Pacific and the Denver & Rio Grande Western, a jointly owned route was placed in operation between Denver and Salt Lake City. These latter roads, through subsidiaries of each, such as the Missouri Pacific Transportation Company, the Denver-Colorado Springs-Pueblo Motorways and the Rio Grande Motor Way, also made marked expansion during the year.

Other outstanding bus-railway transactions include the acquiring of an interest by the New York Central in the Eastern Greyhound Lines, the name of which was thereupon changed to the Central Greyhound Lines. Smaller roads, such as the Norfolk Southern and the East Tennessee & Western North Carolina, also consolidated their positions as bus operators on a large scale, the former having entered into joint ownership of an elaborate and modern bus terminal at Norfolk, Va.

These roads, as well as others which had previously established bus-operating subsidiaries, are not endeavoring to compete with themselves. Rather, it is the universal thought among these roads that, as the transportation agencies traditionally serving their territories, it is their responsibility to supply the sort of transportation that the public wants, whether by bus or rail. In addition, it is also felt that the provision of bus transportation by a railroad attracts, in the main, only those passengers who would use independent bus operators' facilities rather than the trains and that the name of the railroad should be kept before them as a transportation agency.

Train Connection Services

What might be termed "store-door delivery" of passengers through train connection service is also expanding, and its convenience and flexibility are recovering traffic for the railways. The original train connection bus service, that of the Baltimore & Ohio between Jersey City and various points in metropolitan New York, continues to be successful in attracting passengers to the railroad. On the other side of the continent, the Union Pacific operates a similar service, for somewhat longer distances, in the Los Angeles and suburban area. On the Mississippi Gulf Coast, the Illinois Central also has a somewhat similar train connection bus service in operation. All of these services have more than proved



A Union Pacific Bus in Utah Parks Attracts Tourists to the Rail-Highway Scenic Trips

their worth since they were installed. The flexibility and convenience which they afford are keeping passengers on the rails who might otherwise use their cars.

The Pacific Greyhound Lines are partly owned by the Southern Pacific, the bus company having grown to have a net income of over \$1,000,000 a year, following its formation through the consolidation of the former Southern Pacific Transport Company and several independent operators. The P. G. L. has, since its inception, provided for numerous train replacements on branch lines. This year, however, it branched into a new field of rail-highway co-ordination when it took over, in effect, practically the entire suburban service of the Northwestern Pacific, a rail subsidiary of the S. P. This eliminated wasteful competition between rail and highway in the thickly settled northern peninsula district adjacent to San Francisco and the resort territory beyond.

New train connection services in the San Francisco district are also promised, when the bridges are completed, as both the Southern Pacific and the Santa Fe have asked for permission to operate train connection buses across the San Francisco-Oakland bridge.

Another development of rail-highway co-ordination that is attracting passengers to the rails is the close co-

connection with various northern lines, has experienced a successful year with a detour operated in the Great Smoky mountains of North Carolina and Tennessee.

Rail-highway co-ordination, of various sorts, by its flexibility, provides a more complete transportation service than can possibly be provided by rail transportation alone. The many roads using it are discovering that it is of powerful assistance in aiding in passenger traffic recovery.

Air Conditioning of Major Importance in Attracting Traffic

(Continued from page 711)

are finding that if they are willing to provide the service and the comforts that it wants the public will ride on trains; in fact, the number of travelers who express a preference for rail travel because of its comfort, safety and speed is increasing day by day.

"Air-conditioned comfort" has been one of the principal themes of the passenger advertising campaigns of the railroads during the past three years and the reports that come from many sources indicate that it is one of the important reasons why more people are "riding the rails."

Air conditioning is here to stay. Its extension no longer hinges upon whether or not it is a profitable investment considered in the narrow sense of an immediate increase in revenues, but rather on the fact that it is an investment in the public interest—one which the public likes and will henceforth expect to be extended in its application. As the number of cars equipped with this new facility increases, those roads which are slow in providing the comfort which it creates are going to find competition with the more progressive roads increasingly difficult.

An interesting indication to be drawn from the passenger-traffic statistics is that while non-commutation passenger traffic has improved in the past three years, the curve of commutation traffic has been continually on the downgrade. Is it possible that an extension of air conditioning into that field of transportation might improve the situation? The start has already been made on one road in the east.



Train Connection Buses Have Added Flexibility in Metropolitan Areas

operation of the railways and the national park bus companies. In some of the national parks—Utah, for example—the railway operates the buses itself, but in all of them through tickets are sold, baggage is checked through and joint rail-bus tours are arranged. This system is not confined to the national parks; the same through arrangements may be made for joint rail-bus tours to include three days on the buses of the California Parlor Cars Company, jointly owned and operated by the Southern Pacific and Pacific Greyhound Lines.

The so-called "detour" arrangements are also proving business getters for the rail lines. These include the Indian Detours on the Santa Fe, the largest and most elaborate of all, as well as the Apache Trail, and the Redwood Empire Tour of the Southern Pacific and the Logan Pass detour of the Great Northern.

These detours are by no means confined to the West, however. The Illinois Central provides a detour to the plantations of Natchez, Miss., while the Southern, in

Appeal Design in Equipment

(Continued from page 716)

cally, to make it all look as one unit, the industrial designer is there with his specialization in shape and color. By correct use of decorative striping, by correct use of light, by correct use of color, he can either make the car look warm or cold, low and wide, or narrow and high.

There is no further reason today for green-and-mahogany; the cleanliness of air conditioning permits the use of new and bright colors.

The most important and attractive point of a modern train is, or can be, if correctly designed, the observation car at the end of the train. Here we have to adjust ourselves to the practical demand, and a streamline tail end, which gives the passenger no observation platform, is today out of style. The passenger loves to look out and the more unobstructed his view can be made the better he will like it. We might have to sacrifice a little aerodynamical efficiency, but in the interest of passenger appeal it is worth while.

British Railways Succeed in

RETAINING PASSENGER PATRONAGE

Pricing to meet low income brackets, intensive advertising
hold per capita revenue at over twice that of U. S. railways

THE British railways have been far more successful than the railways in this country in retaining passenger traffic and revenues in the face of the development of competitive forms of transportation. The obvious explanation for this contrast is the much wider distribution of private passenger automobiles among the mass of the population in this country as compared with Great Britain. Observation beyond the obvious, however, suggests that this factor is not the only one which has brought about the contrast.

In 1923, for instance, automobile ownership in the United States in proportion to population had already advanced much further than in Great Britain, and yet in that year the average expenditure per inhabitant for railway travel was materially greater in the United States than it was in Britain. By 1933, however, the railway travel expenditure per inhabitant in Britain was more than twice as great as it was in the United States. Comparative policies with regard to rates, advertising, and merchandising methods generally, have unquestionably had considerable bearing on events. The purpose of this discussion is, first, to examine the contrasting trends in passenger traffic and revenues in the two countries since 1923 and, second, to outline some of the probable causes—aside from Britain's paucity of automobiles—which may lie in the merchandising and operating practices of the British railways in contrast to those which have obtained with us.

Chart I shows the trends of passenger revenues (commutation traffic excluded) in the two countries for the years 1923-24 inclusive, with 1923 revenues taken as

100 per cent. It will be seen that revenues in both countries tended markedly downward until 1932 in Britain and 1933 in the United States, since which time they have been rising in both countries. The recession was much more severe in this country than in Britain. Over there, when the decline reached its lowest point, in 1932, revenues still were 65.2 per cent of 1923, whereas with us the low point, reached in 1933, showed such a catastrophic drop that passenger revenues in that year were only 26.2 per cent of those of 1923.

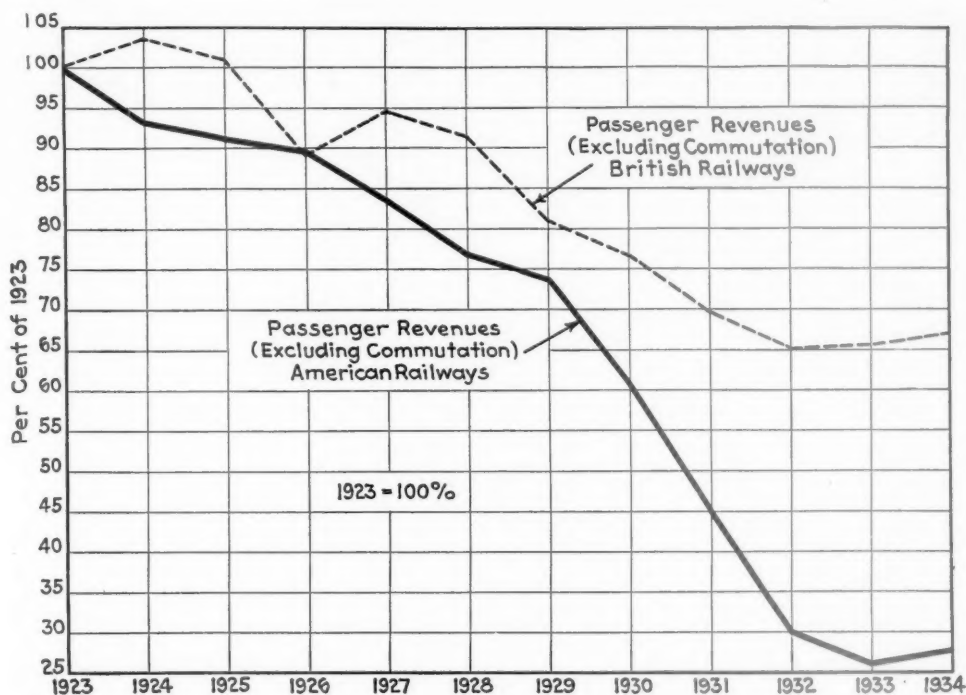
Comparable statistics of passengers carried one mile and average revenue per passenger mile are not available. The British railways do not compile such statistics on an annual basis, but show them only for one sample month—usually September—during the year, and even this fragmentary record is absent for some of the years under review. Excluding commutation traffic, the average revenue per passenger mile in the month of September on the British railways was, in percentages of the average revenue for September, 1923, as follows (with comparisons with revenues per passenger mile of American railways for the entire year in percentages of 1923):

Revenues Per Passenger-Mile in Percentage of 1923
(Excluding Commutation)

British Railways	American Railways
September, 1924.....93.7%	Year, 1924.....99.2%
September, 1927.....86.8%	Year, 1927.....97.8%
September, 1930.....77.6%	Year, 1930.....95.5%
September, 1932.....75.3%	Year, 1932.....79.1%
September, 1934.....65.8%	Year, 1934.....63.7%

It will be seen that the British railways made con-

Chart I—How Passenger Revenues
Have Declined Since 1923 in Brit-
ain and the U. S.



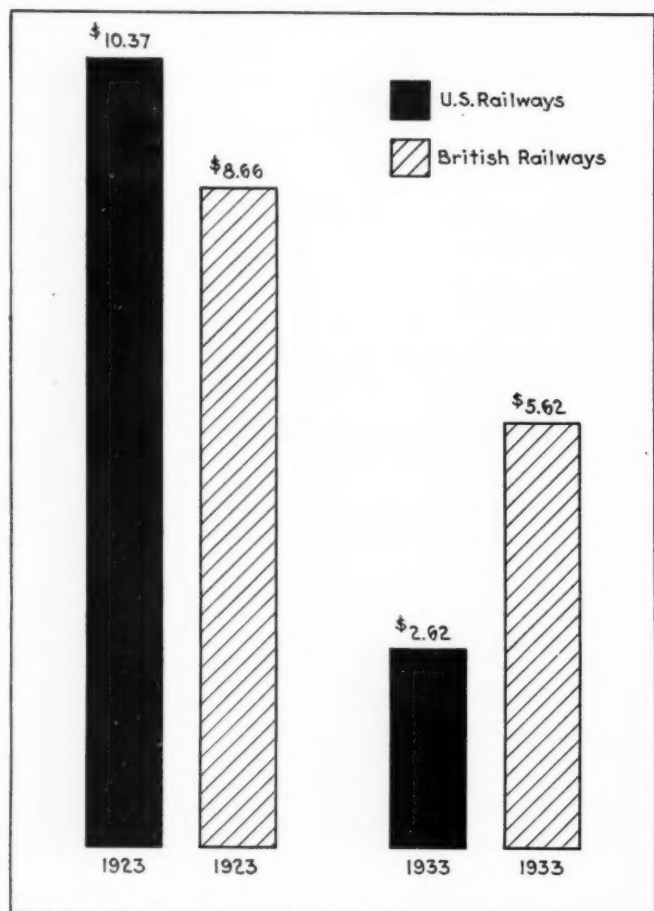


Chart II—Expenditures for Rail Travel per Inhabitant in the U. S. and Britain, 1923 and 1933 Compared (£ to \$ at 4.8665)

cessions in rates much sooner than did the American railways, but that the American railways have now gone even further in this direction. The policy of the British railways has, however, had this distinction from the American practice, namely, that no effort was made to keep existing business at existing rates while trying to attract new business at lower rates. The British railways have made no reduction in their basic rate (1½d.—approximately 3 cents—per mile, third class, and 2½d.—approximately 5 cents—first class). They sell round-trip tickets with a 30-day limit at one penny (approximately 2 cents) a mile (first class 1½d., or 3 cents), good on all trains and honored for return by another route or a different company. The reduced rates are worked out systematically on a mileage basis and are divisible, for the most part, into the following categories:

Kind of Ticket	Approximate Rate (in U. S. Currency) Third Class
Monthly return	Round-trip at 2 cents each way (limit 30 days)
Tourist	Round-trip at 2¼ cents each way (limit 3 months)
Circular tour	One way, 2¼ cents (limit 3 months)
Week-end	Round-trip at 2 cents each way (limit Friday to Tuesday)
Night travel	Round-trip at 1½ cents each way (limit 17 days)
Day return	Round-trip at 1½ cents each way (limit one day)
Day excursion	Round-trip at approximately 1 cent a mile each way (on special trains only as advertised)
Half-day excursion	Round-trip as low as ¾ cent a mile each way (on special trains only as advertised)

In addition there are special rates for hikers and cyclists (permitting a return from a station different from the outbound destination), for anglers, for week-end visitors to the Continent and for parties (juveniles, athletic teams, outings, campers, cadets, etc.). Commissions are allowed to promoters of day excursions by the train load of 200 passengers. There is also a multiplicity of season tickets good for unlimited travel in definite areas during a specified period. There are other

your holiday fare-



MONTHLY RETURN TICKETS
ANY TRAIN ANY DAY
VALID EITHER WAY FOR A MONTH
1st Class Monthly Return Fares now only 1½d. a mile

TO	1st Class	3rd Class
ABERDEEN	124/3	82/9
ABERYSTWYTH	59/-	39/3
BATH	27/-	18/-
BLACKPOOL	57/-	38/-
BOURNEMOUTH	27/-	18/-
BRIGHTON	13/3	8/9
BUXTON	41/9	27/9
CLACTON-ON-SEA	18/-	12/-
CLEETHORPES	39/9	26/6
DAWLISH	46/3	30/9
DOUGLAS (I.O.M.)	69/6	45/6
DUNDEE	113/3	75/6
EASTBOURNE	16/3	10/9
FALMOUTH	72/9	48/6
FILEY	58/3	38/9
FOLKESTONE	18/6	12/3
GLASGOW	100/6	67/-
HARROWGATE	50/-	33/3
HASTINGS & ST. LEONARDS	16/3	10/9
HUNSTANTON	28/6	19/-
ILFRACOMBE	50/9	33/9
INVERNESS	131/9	87/9
ISLE OF WIGHT	from 21/9	14/6
LLANDUDNO	57/-	38/-
MALVERN	31/3	20/9
MARGATE	18/9	12/6
NEWQUAY	70/3	46/9
OBAN	125/9	83/9
PAIGNTON	50/3	33/6
PORTSMOUTH & SOUTHSEA	18/9	12/6
RAMSGATE	19/6	13/-
RHYL	52/6	35/-
SCARBOROUGH	57/9	38/6
SKEGNESS	33/-	22/-
SOUTHPORT	53/3	35/6
TORQUAY	49/6	33/-
WESTON-SUPER-MARE	34/6	23/-
WEYMOUTH	36/-	24/-
WINDERMERE	65/3	43/6
WROXHAM (for the Broads)	31/3	20/9

Children under 14 half fares.

IT'S QUICKER BY RAIL !
G.W.R LMS L.N.E.R S.R.

Popularizing the Slogan "Penny Per Mile"

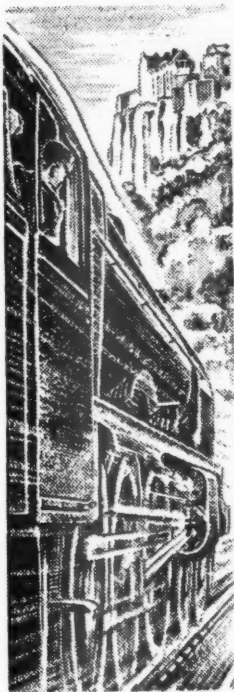
"bargain counter" inducements offered by some companies such as, for instance, "evening tickets" good for a round-trip begun after 4 or 5 p.m. (promoting theater-going and evening visits by persons who otherwise would stay at home).

Of particular interest, perhaps, is the use of special



The Flying Scotsman

Every week-day morning on the stroke of ten o'clock "The Flying Scotsman" pulls out of King's Cross on its record non-stop run of 393 miles to Edinburgh by the East Coast Route. This journey is accomplished with facility and smooth efficiency, and is combined with luxury cuisine and superb staff-service. Amongst the amenities—comparable to a luxury hotel—are a buffet, a salon de coiffeur, a Louis XVI restaurant and a ladies' retiring room.



The Royal Scot

Also on the stroke of 10 o'clock this famous train leaves Euston each week-day, performing the non-stop run to Glasgow in 7 hours 40 minutes; a luxurious train which offers every amenity in comfort and service.

The Royal Scot takes the West Coast Route, climbing through the mountains of the English Lake District, over Shap and Beattock summits—each a steep incline rising to a thousand feet—yet so smooth is the track and so comfortable the coaches that passengers enjoying scenery of unsurpassed beauty are unaware of the change in gradient.

With a return ticket to Scotland, you have the choice of travelling back by the East Coast, West Coast, or Midland routes, with break of journey at any station. Ask at any L.N.E.R. or L.M.S. Station or Office for details of Penny-a-mile Monthly Return Tickets (First Class now only 1d. a mile), Tourist Tickets and Circular Tours.

MOTOR CARS accompanied by one first-class or two third-class adult passengers are conveyed to include outward and homeward journeys at the reduced rate of 4½d. a mile charged on the single journey mileage for distances not less than 50 miles. Single journey charges at 3d. a mile.

IT'S QUICKER BY RAIL



LONDON & NORTH EASTERN RLY. • LONDON MIDLAND & SCOTTISH RLY.

Joint Advertising of Rival Limited

Summary of Facilities by Passenger Train



Inquiry and Ticket Offices
Literature and Time Tables
Luggage, Parcel, Bicycles, Dogs
Seat Reservations
Cheap Tickets for Parties
Up to 100 Individuals

An Indexed Booklet Giving a Succinct Summary of All Rates and Services

low passenger rates to stimulate freight business. Families changing their residence who ship their household goods in railway containers may journey by train to their new homes at two-thirds the standard rate. Any firm which does not less than \$1,500 of business in a year with the railways which serve its city may secure vouchers which entitle its representatives to a reduction of 32.5 per cent in one-way first class fares, 25 per cent in one-way third class and 5 per cent in "monthly return" fares, or 5 per cent off of standard rates for travel on the railway air lines.

The rates, in other words, have been made reasonably low (approximately 2 cents a mile) for round-trip tickets available at all times, and in addition there are numerous "bargain counter" rates at special times so that *some rail travel is brought within the budget limitations of families in the lowest income groups.* This is the merchandising principle—covering with a product the widest possible range of population and income—which has been followed with such outstanding success by the automobile and radio manufacturers and the big department stores in this country.

"Penny a Mile" in Minds of All

"A Penny a Mile" is a good advertising slogan and the British railways have brought it strongly to the attention of the public by every kind of advertising medium. That phrase is as familiar to the man in the street in England as "Not a cough in a carload" was a short time

ago in America. And everybody knows it means rail travel. (Bus fares are somewhat lower than this rate, but buses in England are only about half as fast as trains.)

What Is the Auto Competitive Rate?

While 2 cents a mile may seem a fairly substantial figure at which to attract a great bulk of passenger business, it must be remembered that the costs of operating an automobile in England are much higher than in the United States. License fees are 15 shillings (roughly \$3.75) per horsepower per annum. The gasoline tax figures out at approximately 13 cents per U. S. gallon,

in Britain. Railway employees—porters included—are as solicitous for the comfort of the third class traveler as for the one traveling first—or so, at any rate, it appeared to the observer, who traveled extensively in both classes. By contrast, and speaking from experience, the passenger with the cheaper accommodations in this country is occasionally made to feel ill at ease and as though he, somehow, were being tolerated rather than really welcomed.

All employees encountered were uniformly courteous, but not markedly more so than would be found on the American railways. The tipping practice appears to be more widespread on the British railways but, on the other hand, the courtesy and efficiency of the service did not appear to fluctuate in proportion with the employee's estimate of what the tip would be. Dining and sleeping car service is not so important a feature where journeys are short, and in these departments there is little that the British railways are doing which is not done at least equally well in America. Pullman (parlor car) services are provided in some places, but they are not widespread. The great variety of accommodations which prevails on the American railways is lacking in England—and is probably to be accounted for by the prevalence of short journeys.

Frequent Schedules Maintained

There is practically no air conditioned service in Britain, and there is little need for it, because the summer climate is relatively cool and the coal used is clean (so clean that windows can usually be left open with comfort even when going through tunnels). The service is fast, but not any faster, on the average, than that of the American railways—but it is considerably faster, in most cases, than highway travel. Train frequencies are very high—in local as well as through service, and in rural areas as well as in built-up sections. There was a tendency toward curtailing service when business started to fall off, but it was found that such curtailment drove away a volume of business disproportionate to the reduction in service. Of course, with small trains requiring only one trainman, the wage costs per train-mile are not excessive, and the necessity for economy in train-miles is not so pressing. The safety record of the British railways is closely comparable to that of the American lines, which is a remarkable achievement in view of the general prevalence of wooden equipment. The absence of grade crossings and the comparative lightness of the equipment with reference to the track structure are, in all probability, along with strict adherence to absolute blocking, contributory causes to this record.

Service Advertised Intensively

But the principal contrast of British railway passenger service with the American, which might account for its greater commercial success, is the intensity with which it is advertised. Every available medium of advertising is used—one of the most effective being the sides of the thousands of railway collection and delivery vehicles operating in the streets (an advantage of store-door collection and delivery by railroad, instead of contract trucks, which is usually overlooked). The railways have many city ticket offices of their own and they pay commissions to travel agencies, so that window displays of the latter are devoted to rail travel as well as that by other forms of transportation. Newspapers, business publications, magazines, telephone directories, posters (beautiful lithographs), telephone directories—every publicity medium carries the sales message of the railways. And the advertising is not directed against other

EVENING EXCURSIONS
TO
SHEFFIELD AND NOTTINGHAM
Saturday 16th November

FROM
Manchester (London Rd.)
Gorton
Guide Bridge
Newton
Glossop (Central)
Hadfield
Sheffield (Victoria)

RETURN FARES—THIRD CLASS
TO SHEFFIELD

2¹/₆

TO NOTTINGHAM

2¹/₃
1¹/₆

STATION	DEP.	ARR.
MANCHESTER (London Road)	5.15	5.15
GORTON	5.20	5.20
GUIDE BRIDGE	5.25	5.25
NEWTON	5.30	5.30
GLOSSOP (Central)	5.35	5.35
HADFIELD	5.40	5.40
SHEFFIELD (Victoria)	5.45	5.45

Nottingham (Victoria) 6.15

Passengers return from NOTTINGHAM (Victoria) at 11.15 p.m., and SHEFFIELD (Victoria) at 12.15 a.m. (early morning 17th), same evening.
Tickets, bills and full particulars obtainable at L.N.E.R. Stations, Offices and usual Agencies.
London, October, 1935.

Poster Announcing Rates of Less Than $\frac{2}{3}$ Cents a Mile, Boosting Evening Travel for Short Distances

and car owners must carry insurance. A railway rate low enough to tempt the automobile owner to leave his car in the garage and travel by train thus can be successful at a higher figure in Britain than would be required in the United States.

The rates mentioned above are, for the most part, third class, which comprises the bulk of the business. First class reduced rates run, in general, about 50 per cent higher than third class. Accommodations for third class passengers, except in suburban service, are just about as comfortable as first class. The principal one could almost say the only—advantage of first class is a lower percentage of occupancy. There is no feeling of inferiority in any respect attached to third class travel

railways. The entire sales message is aimed at increasing railway traffic as such—not toward diverting traffic from one railway to another. The total result is that one cannot easily spend ten minutes in any active manner without being forcibly reminded in some way of railway travel—its comfort, its speed and its economy.

Certainly one sees there no comparable sales activity in behalf of any other form of transportation, even of the private automobile. The accompanying illustrations will give some idea of the range and intensity of this advertising. The extent to which railway sales effort is a joint undertaking is particularly noteworthy.

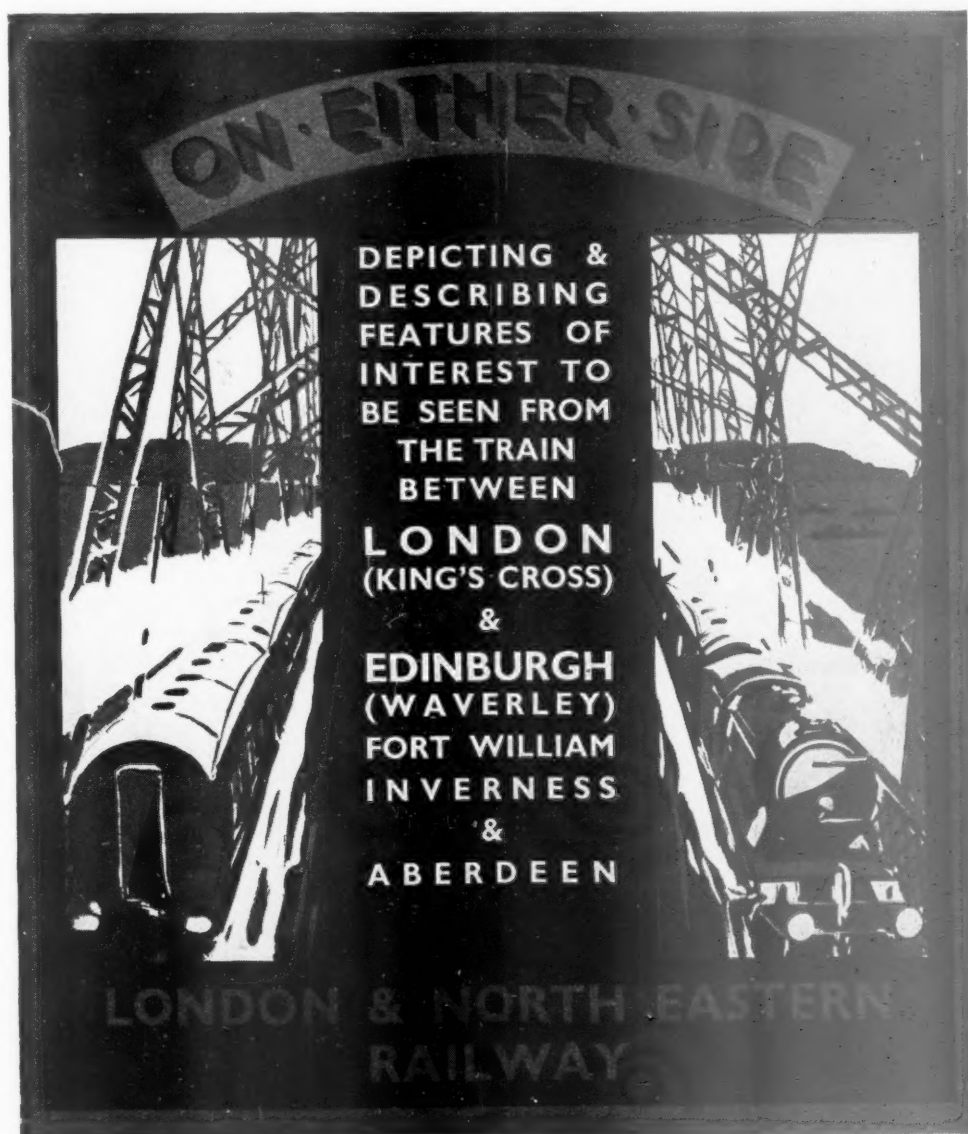
Learning From Others' Experience

Conditions in Britain and the United States are about as different as they could be with respect to passenger traffic. One could not expect that the same methods

To summarize, this observer leans to the opinion that (aside from less intensive automobile competition) the principal characteristics of British railway passenger service which may account for its commercial success are the following:

1. Scientific pricing, based on comparative prices of competing services and being sufficiently elastic in a downward direction to bring some railway travel within the reach of the lower income groups.
2. Cheap service, but without making the patrons themselves feel cheap or inferior when they utilize it.
3. Comfort by reason of a cool climate and clean fuel which, unfortunately, can be attained in America only by air conditioning. (Air conditioning, of course, would improve cars even in a cool climate, but the lack of it in such climate does not keep customers away.)
4. Intensive advertising (and allowance of commissions

Taking the Boredom Out of Train Travel—A Handsome Folder in Colors Which Describes Everything of Interest Seen from the Train Window Between London and Aberdeen



would produce similar results in both countries. The principle of dealing with the problem of passenger traffic scientifically in the light of realities rather than from a standpoint of tradition, however, would appear to apply equally to both countries. From that point of view railway men in each country can learn a great deal by familiarizing themselves with the conditions and accomplishments in the other.

to travel agents) which brings railway travel, its comfort and economy constantly to the attention of the public, *surpassing the advertising of any competing form of transportation.*

5. Sales effort directed entirely toward getting passengers on the trains, and not to diverting traffic from one road to another.

6. Frequent service provided, even in rural areas.



The North Western's "400" Runs Over Well-Maintained Track

GOOD track is the foundation for high-speed operation. Recognizing this fact, maintenance officers have anticipated the spectacular developments in the speed of passenger trains of the last three years. They have been aware that while comfortable riding is always desirable, it is an essential of high-speed passenger operation. They are also aware that track which rides smoothly and is entirely safe for speeds of 40, 50 or even 60 miles an hour, may be neither comfortable nor safe at speeds of 80 to 90 miles an hour and that, as the speeds approach or exceed 100 miles, the severity of the conditions increases much more rapidly than the speed.

Track as a whole does not fail suddenly, tending under normal conditions toward gradual failure which occurs with a strange lack of uniformity. It is an established fact, however, known to every experienced trackman, that this form of destruction takes place more rapidly as the speed of traffic increases. Obviously then, so-called superspeed operation makes two basic demands, one for stronger track and the other for greater refinement in maintenance.

Stronger Track Is Essential

Whether the first of these demands will eventually lead to radical changes in track design is a question that cannot yet be answered. The whole development is so new that even those who are in closest touch with it do not know whether present forms of motive power and cars will survive or whether other forms which cannot now be foreseen will be evolved. For this reason, there is little profit in discussing changes in the design of track until one knows more about what future requirements will be.

On the other hand, there are many opportunities on most roads to increase the strength of the track without making any basic change in design. The first of these is the use of heavier rail. In this connection, it is interesting to note that on December 31, 1933, the last

What of the Track?

Greater strength and refinements in maintenance not heretofore warranted make high-speed train service possible

year for which complete figures are available, the average weight of rail in the main tracks of the Class I roads was only 92 lb. per yard. On the same date, 66 per cent of all main tracks on these roads, on a mileage basis, was laid with rail weighing less than 100 lb., and 42 per cent of the total weighed less than 90 lb. Against this, only 26 per cent of the total mileage was laid with sections weighing from 100 to 129 lb., and sections from 130 to 139 lb. represented only 7 per cent. Of the 18,763 miles in the latter range, considerably more than 8,000 miles were on a single road.

With few exceptions, in modern designs of rail, the stiffness of the rail increases as the weight increases. This in itself makes stronger track, but the full benefit of this increase cannot be obtained unless the remaining details of the track are brought to a corresponding level. In raising the standard of track construction, all of these details are important and some of them are interdependent, for which reason it is difficult to evaluate them individually as to relative importance. Yet the joint probably holds first place in this respect, since the continuity of the rail is broken at this point and only a relatively few designs of joint fastenings approach the



On the Route of the Flying Yankee

strength of the unbroken rail. Therefore, when raising the standard of track construction in preparation for these higher speeds, most careful attention is being given to selecting joints of the proper design to minimize the rate of the gradual destruction of the rail and joint and thus insure good-riding conditions at the rail ends.

Even though the best of materials may be used, the joints will not remain in good riding condition unless the joint bars are kept tight and the running surface at the rail ends corresponds to that on the remainder of the rail. This means that the maintenance forces must be constantly alert to keep the bolts tight and the joints properly surfaced. Furthermore, since smooth-riding joints are not possible unless the ends of the rail are to the same elevation as the running surface elsewhere, more attention is being given to building them up by welding as soon as the joint batter progresses to the point where it affects the riding qualities.

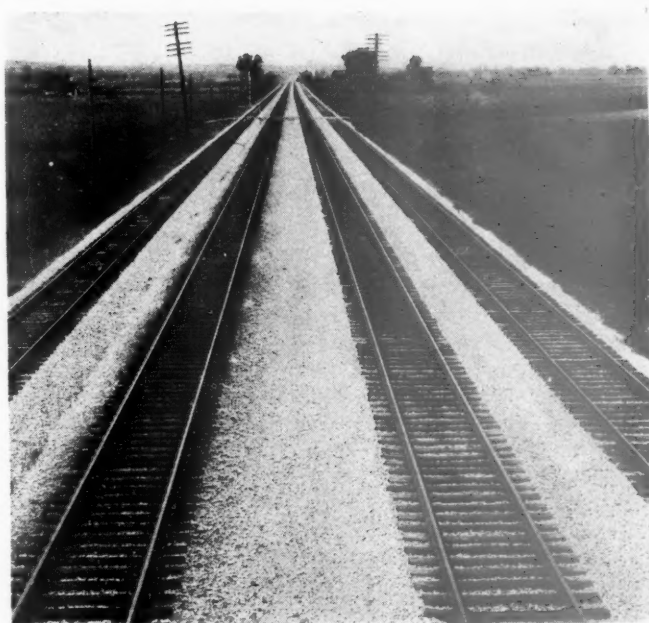
Modern track without tie plates is unthinkable. Yet despite this, on not a few main lines, many ties are still unplated and others are inadequately protected by plates of small area or thin sections. Without tie plates of proper area and section to insure maximum protection to the ties and to hold the track to gage, maintenance costs will be out of line for track of the standard that should be provided for the era of higher speeds which we are now entering.

Whether tie plates should be provided with one or two shoulders is still a matter of debate among maintenance engineers. There is greater unanimity of opinion, however, that the best results with respect to minimizing mechanical destruction of the ties and holding the track to gage are obtained when the plates are fastened to the ties independent of the rail fastenings. Of late, there is also evidence of a growing belief that stronger track can be obtained through the use of a fastening which will hold the rail to the tie plate, without fastening it directly to the tie. While these refinements in design may be desirable and may result, as claimed, in stronger track and reduced maintenance, tie plates of adequate area and section are essential if all of the potential advantages of heavier and stiffer rail are to be obtained.

It is the universal experience that, unless restrained,



The Burlington's Mark Twain Made 122 Miles an Hour Over This Track



The Santa Fe's Chief Operates Over These Tracks West of Kansas City

rail will creep under traffic. This creepage results in poor line and surface and, in extreme cases, may create unsafe conditions, more than one serious derailment having resulted from creeping rail. Comfortable riding at high speed is not possible if the line is poor, while safety demands the elimination of conditions which may cause derailments. For about three decades this restraint against longitudinal movement of the rail has been provided through the use of anti-creepers. Probably no single track accessory has done more to assure stability to the track and smooth-riding conditions than the anti-creeper. For this reason, when preparing and maintaining track for high speeds, the importance of ample anchorage against creepage cannot be overlooked, for this greatly minimizes the amount of maintenance that is required.

High-speed operation, to be successful, demands first of all stability of the track. Therefore, back of these details of track materials and track construction there must be sound ties, clean ballast of sufficient depth to support them effectively and a stable well-drained road-bed. Strong, smooth-riding track is impossible with even the best of materials unless it rests on a stable foundation, and this stability can be secured only with clean ballast and adequate drainage.

Curves a Major Problem

Curves have long been a major problem in providing smooth-riding track at ordinary operating speeds. High-speed service is giving them a new prominence and is directing attention to them to a greater extent than heretofore. To a degree seldom realized by passengers, curves limit the speed of operation, for which reason all of the roads instituting such service have given intensive consideration to their curves.

On those roads which are operating high-speed trains much study has been given to the determination of the amount of superelevation that should be provided to insure comfortable riding. The maintenance officers of these roads have also recognized that this elevation must have a uniformity not heretofore considered essential, for they are aware that any considerable lack of uniformity may open the way for derailment when a train is operating at speeds of 90 to 100 miles an hour. In any event, they appreciate that lack of uniformity in

superelevation will create irregularity of motion in the cars, which is likely to create a feeling of insecurity and cause passengers to become apprehensive. Furthermore, they are assigning equal importance, with the elevation and its uniformity, to the manner of approaching the curve in order that the train shall enter and leave it smoothly.

To obtain the proper approach and thus insure a smooth-riding transition from tangent to curve and from curve to tangent, there must be a correct relation between the degree of curvature, the length of spiral and the rate of transition from level track to the superelevation of the curve. With the speeds that have prevailed heretofore, the practice in this respect has been subject to considerable variation. Some roads have spiraled all curves of one degree and sharper; others have considered this an unnecessary refinement and have not spiraled curves of less than two degrees; while a few have not used spirals. Obviously, where no spiral is used it becomes necessary to place the "runoff" from superelevation to level track on the tangent immediately adjacent to the curve, a condition which is not conducive to smooth riding, for which reason all curves of 30 min. and sharper have been spiraled in preparation for the new trains.

Similarly, the practice with respect to the spirals themselves has varied widely, about a half dozen different forms being in use, each of which can be varied as to length for a given curve. As a result, some roads have been using short spirals and have extended the "runoff" beyond the spiral. Others have used spirals of sufficient length to make the spiral and the "runoff" coincident. Even where high-speed service is in operation, these two systems have persisted.

Another problem to which maintenance officers have given much study in connection with the new trains arises from the fact that curves introduce another complication, since for any given curve every rate of speed requires a corresponding minimum superelevation to produce comfortable riding and it requires only a small increase over this minimum to cause discomfort. Yet, as the rate of curvature increases, this minimum for each speed increases directly with the degree of the curve and as the square of the speed in miles per hour. It is obvious, therefore, that where the curvature is much above two degrees, it becomes necessary to limit the speed around the curve to avoid introducing so much super-elevation that it will interfere with slower trains.

Every Minute Counts

Where schedules call for high average speeds, every minute counts and any reduction in speed means a loss of time that must be made up by speeds that are not only correspondingly higher than the average, but for a much greater distance. Thus where schedules are shortened, the loss of time occasioned by reducing speed from perhaps 90 miles an hour to 20 over a drawbridge, through a junction, or where a section gang is working, a distance of possibly not more than 500 or 600 ft., may not in many instances be regained under 40 or 50 miles. For these reasons, the officers of these roads have considered that it is important to remove, so far as practicable, all obstructions to maximum speed.

Since they recognize the advantage of being able to maintain the maximum speed over long stretches, some of the roads which have placed high-speed trains in operation have reduced curvature, where practicable, to one degree. In some instances, where existing curves could not be reduced, line revisions have been made to eliminate the sharper curves. Again, switches have been rearranged at junctions to permit higher speeds through them. For the same reason, they have found it desir-

able to eliminate slow orders where trackmen are working, and maintenance forces are more and more developing methods for doing their work in such ways as do not interfere with the passage of these trains at full speed.

These recent developments in train speeds have given maintenance officers and men a new view point with respect to track. It is obvious from the foregoing that track which was satisfactory for the speeds in effect only a few years ago may be entirely inadequate from the standpoint of comfort for those of today. Only a slight irregularity in the line or the elevation on a curve or in the line, surface, level or gage on tangent, which would scarcely be noticed at ordinary speeds, may cause marked discomfort to passengers at speeds of 90 to 100 miles an hour. These developments in speeds have, therefore, created a new conception with respect to refinement in track maintenance that has not been warranted heretofore on most roads.

Experience on those roads that are operating high-speed trains has shown also that they are more destructive to track, for which reason the track forces recognize that they must be more alert to give prompt attention to small defects for they are aware that if neglected, a



The Hiawatha Takes This Curve at 100 Miles an Hour

small defect may more quickly grow into a larger one. Supervisors and foremen have learned quickly that they cannot afford to allow defects to develop to the point where they will be unable to overcome them. On some roads the density of traffic and the speed of passenger trains have been such for a number of years that the maintenance forces had already acquired a view point with respect to excellence of track which approaches that now demanded by the more spectacular speeds. Yet, even on these roads, maintenance officers testify that the track forces have become more alert to repair small defects promptly than was considered necessary before the new schedules went into effect.

These facts raise the question of what changes, if any, are necessary in the organization of the track forces or in their methods of working to insure that the track will be maintained from day to day to the standard of excellence demanded by the shortened schedules. So far, none of the roads operating the faster trains has found it desirable or necessary to make any changes in the organization of its track forces as a result of the new trains. Neither have any fundamental changes been made in maintenance methods. On the other hand, the supervisory forces have been keyed up to observe small irregularities in line and surface more

alertly, to make frequent checks of the superelevation of curves and to correct small defects immediately rather than to handle them as a routine matter "when they get to them." In some instances, it has been necessary to increase the forces slightly to enable the foremen to attend to small defects promptly without neglecting their routine work.

Two Conflicting Conditions

From the foregoing it is evident that two conflicting conditions confront the maintenance forces as a result of these higher speeds. On the one hand, they are facing a more rapid destruction of the track structure, while on the other they must meet the demand for a higher standard of track and greater refinement in maintenance. These conditions are being met, first by building stronger track to increase resistance to the piecemeal destruction which occurs in all track as a result of the wear and tear of traffic, but which is accelerated as train speeds are increased, and second, by raising the character of track maintenance to a higher level; that is, the work that is done is of a more permanent character to be in keeping with the demands that are made on the track, or as the trackmen say "the track is being put up to stay." Finally, the day-to-day maintenance is not being neglected, in order to insure smooth riding at all times. This leads to serious consideration of the use of those units of mechanical equipment which may be expected to lower the cost of maintenance and at the same time insure added permanence to the work that is done.

Another item which is being given careful thought on a number of roads is the method of carrying out the maintenance program. Of late, there has been a clearly discernible trend toward a larger use of mobile specialized gangs which can employ power equipment to better advantage than the more localized section forces with their multitudinous duties, leaving the section gangs free to look after the day-by-day routine maintenance. Whatever method may be followed, however, it should be of such a character that the section gangs will not be burdened with tasks which will prevent giving prompt attention to those small irregularities in line and surface which are developing constantly, or to other incipient defects which should be corrected before they have developed to major importance.

Maintenance officers have been quick to realize that a train cannot be expected to ride better than the track over which it runs, and that these higher speeds can be maintained only if the refinement in maintenance keeps pace with the demands they make on track. We are unlikely to revert to the speeds of yesterday and those of tomorrow may be more severe in their demands on track than those of today. These new trains, therefore, challenge railway management to afford the maintenance of way department every facility in the way of materials and equipment needed to build stronger track; they likewise challenge maintenance officers to see that these materials and devices are used in such a way as to attain a higher standard of track excellence than ever before.

Financing Modernization Programs

Conditions now most favorable for the marketing
of equipment trust certificates

CONDITIONS have never been more favorable than they are today for the marketing of equipment trust certificates by those railroads which are safely earning their fixed charges. The Chesapeake & Ohio in September sold \$9,000,000 of equipment trust certificates at a price which brought its average interest cost down to 2.85 per cent. In August the Reconstruction Finance Corporation sold \$15,000,000 of Pennsylvania equipment trust certificates, originally sold by the railroad to the Public Works Administration, at a price which made the interest yield only about 2½ per cent on the average.

There is a strong demand for short time investments in the New York money market. Recent quotations on securities of this class (on a percentage basis) indicate that they are sufficiently popular so that of roads which are not in receivership but which still are not earning all their fixed charges, equipment trust certificates are being sold to yield only 3 or 4 per cent.

Indications are, therefore, that roads not actually in the hands of the courts could probably finance all the equipment purchases they are likely to care to make at rates as low as have ever been available. The way to equipment financing even by insolvent roads is not closed. The chairman of the Reconstruction Finance Corporation not long ago announced an agreement with one equipment manufacturer to finance up to 80 per cent of the cost, which would enable the manufacturer to offer the equipment to any railroad on a rental basis

without any railroad financing whatsoever. The Reconstruction Finance Corporation can lend large sums to the railroads to finance equipment purchases and, in the case of the weaker roads, might perhaps do so at rates lower than they could obtain in private markets.

The Railroad Reorganization Act recently passed by Congress clarifies the status of equipment trust certificates, definitely establishing the property rights of the trustees in the equipment until payments have been completed, and not subjecting these securities to the hazards faced by other security holders in the event of reorganization. This clarification has definitely re-established these securities in the high regard of investors.

There is, of course, a natural hesitation by the railroads to invest new capital while that already invested is earning so little. But certain kinds of equipment have given definite proof that they bring an increase in traffic, which is the one means by which the earnings of capital already invested can be augmented. Moreover, the dependence of traffic-originating industries on railway orders for normal business being what it is, there is no surer way of securing a substantial traffic increase on the railways than purchases by the railways of whatever they can buy at unquestionable profit to themselves, with the credit available to them at reasonable rates. The cheap money available, and the improved status of equipment trust certificates, indicate a point of least resistance where a breach might be made in the vicious circle of traffic poverty and reduced railway buying.



New Signaling on the Route of the "400" on the C. & N. W.—Four-Aspect Signal at Right

Signaling Improvements as an Aid In Increasing Train Speeds

Modernization of signaling provides safety at higher speeds—Time saved by reducing delays means lower speeds in motion

MODERNIZATION of signaling has gone hand in hand with new motive power and improved track in preparing for the introduction of train speeds ranging from 80 to 100 m.p.h. The first and most important of these changes has been to so relocate signals



The Boston & Maine Has Extensive Installations of C.T.C., Using Multiple-Aspect Signals

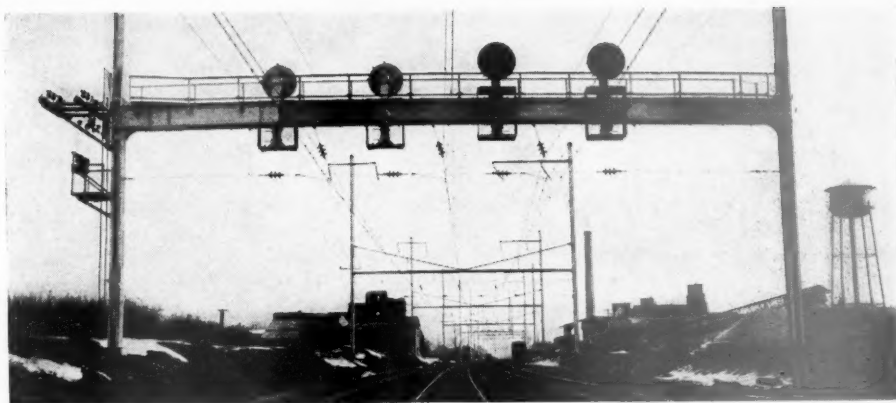
or provide additional approach aspects that enginemen of high-speed trains have sufficient advance warning to enable them to reduce speed and stop short of signals indicating stop. For an ordinary passenger train of 8 or 10 cars, operating at a speed of 60 to 70 m.p.h., a space of approximately 5,280 ft. has been considered sufficient to provide braking distance, with a margin for variables, when using a service application of the brakes. On this basis, a large part of the automatic block signaling and distant signals at interlockings have been installed, using three-aspect signaling, so that an engineman will encounter a caution aspect at least stopping distance in the approach to any signal requiring a stop.

Tests with trains operating at speeds of 85 to 100 m.p.h. demonstrated the fact that the stopping distance increases at a sufficiently greater ratio than the increase in speed that a space of about 8,000 ft. should be allowed for braking distance, with a reasonable margin for variations in braking equipment and the handling of trains. On this basis, one of the first things that has been done on roads preparing for high-speed trains has been to move the approach signals at interlockings back far enough to allow full stopping distance between the distant and the home signals.

Consideration of Automatic Block

In automatic block territory where the traffic at the time the signals were installed was such that adequate track capacity was provided by spacing three-aspect

New Signaling on the New York-Washington Route of the Pennsylvania



signals more than 8,000 ft. apart, no changes have been necessary, as, for example, on certain parts of the Hiawatha's route on the Milwaukee where the automatic blocks were about two miles long. However, on extended sections on various roads on which trains are or will be operated at speeds greater than 90 m.p.h., the existing signaling is built with blocks about a mile long. With such installations of three-aspect signaling, several methods have been employed to provide adequate braking distance.

The first, a temporary arrangement, is to provide duplicate restrictive aspects by changing the controls to present a caution aspect on two succeeding signals in approach to one indicating stop. Some of the objections to this method are that it limits the track capacity, introduces unnecessary delays if the enginemen obey the speed restrictions established by the rules, and confuses enginemen with regard to the meaning of the aspects.

A second temporary means is to establish or lengthen overlaps so that the stop aspect of a signal is controlled for a section longer than the distance to the next signal. This likewise confuses enginemen, and may result in unnecessary rough stops. A third means of providing adequate braking distance is to relocate the signals, as has been done on 78 miles of double track between Mayfair, Ill., and Milwaukee, Wis., where the Milwaukee lengthened the blocks from about 5,100 ft. to approximately 7,600 ft., three-aspect signaling being used. Likewise, on the North Western between Highland Park, Ill., and Milwaukee, Wis., on the route of the "400," the old disk-type, two-position automatic-block signaling has been replaced by a new system of searchlight-type, three-aspect color signals, spaced at least stopping distance apart.

Another example of resignaling to provide adequate braking distance is that of the Pennsylvania on its electrified territory between New York and Washington, where an entirely new system of three-aspect position-light signaling with cab signaling, all operated by the new code system, has been installed, with blocks about 8,000 ft. long, which arrangement is considered adequate for train speeds of 90 m.p.h. on that line. Likewise, on the double-track line of this road between Ft. Wayne, Ind., and Hobart (Chicago), the blocks have been rearranged and lengthened from about 5,000 ft. to 8,500 ft.

Long Blocks and Only Three Aspects Limit Track Capacity

However, the difficulty introduced by lengthening blocks to provide adequate braking distance for a few high-speed trains is that all trains must be spaced so far apart as to limit the track capacity, thereby handicapping train operation during peak periods, especially in the

vicinity of large cities where suburban trains must be moved on the same tracks. Similar difficulties are introduced at other points on the line, such as for example at interlockings involving junctions, crossings, or crossovers, because long blocks require line-ups to be made earlier, and result in unnecessary reductions of train speeds, especially for freight trains.

Therefore, on territories where adequate track capacity, and the opportunity to operate all trains at maximum permissible speeds consistent with safety, are important, the next logical step in preparation for higher train speeds has been to provide signals with more than three aspects. For example, on the North Western suburban territory between Wilmette, Ill., and Highland Park, on the route of the "400," the old enclosed disk signals have been replaced with new color automatic block signals providing four aspects, the blocks being 3,000 ft. to 3,400 ft. long in the most congested territory and lengthened to 5,000 ft. to 6,000 ft. as conditions permit. Likewise, on the 32-mile section of the Milwaukee between Roundout, Ill., and Chicago, where the number of trains is greater on account of suburban service, it is planned to install four-aspect signaling with blocks somewhat less than a mile in length.

The advantages effected by multiple-aspect signaling have been presented in articles which have been published in the *Railway Age* describing such installations on the Boston & Maine, the New York Central and the Erie. In brief, the advantages of using four or more



The More Extensive Use of Automatic Control Crossing Protection Is Needed Where High-Speed Trains Are Operated

aspects are that all trains can be kept moving at the maximum permissible speed a greater percentage of time, and that many unnecessary stops are eliminated, especially short ones, by the use of emergency applications. Increased track capacity is, of course, the principal objective of multiple aspects.

If automatic signaling is not now in service on lines where high-speed trains are to be operated, it is perhaps needless to say that such facilities should be provided as soon as possible as a safety measure, even if track capacity is not an important factor. It is for this reason that the Missouri Pacific is installing automatic signaling on 111 miles of line between Shannon, Kan., and Union, Neb., the only section of the route of the Marathon between Kansas City and Omaha that was not previously so equipped.

To Keep All Trains Moving

The discussion so far has dealt primarily with the factors involved in providing proper protection for the high-speed trains and in keeping them moving at the maximum permissible speeds at such times as is consistent with safety, depending on conditions ahead. However, important as these objectives may be, they deal with only one phase of the possibilities which may be effected in increasing average train speeds by the use of adequate signaling facilities.

On account of the extended time required to bring a train moving at high speed to a stop as well as to accelerate again to maximum speed, all unnecessary stops must be eliminated. Furthermore, even short delays disrupt schedules of high speed trains because these schedules are usually so tight that there is little allowance for making up lost time. Therefore, in order to attain consistent success for these faster schedules, stops and delays occasioned by other trains must be reduced to a minimum. Getting these other trains out of the way of the fast trains, and doing so on such close time as not to delay the slower trains unduly, is a result that can be accomplished most effectively by interlockings, together with remote power switches and signals for directing train movements without train orders. The results in expediting trains are the same, whether the power switches and signals are included in interlockings or are controlled remotely from a central point on a territory, as represented by the centralized traffic control system.

An explanation of the time saved by numerous installations of interlocking, remote control switches, and centralized traffic control would be too extended for the space available here, but the facts are readily available to those interested. The point is that in many instances the desired reduction in overall running time between termini can be accomplished in a more practical way and at less expense, with more benefit to the operation of all trains, by installing adequate signaling facilities, than by purchasing motive power capable of extraordinarily high-speeds, the operation of which requires the reconstruction of tracks and special maintenance.

Better Protection at Highway Crossings

Faster schedules introduce problems also in protecting highway crossings. The A.A.R. Signal Section standards specify a minimum of 20 seconds operation of automatically-controlled highway crossing signals prior to the arrival of the fastest train at the crossing. For trains running 60 m.p.h., a track circuit about 2,000 ft. long has been considered ample to provide 20 seconds operation of the signals. When preparing for train speeds up to 100 m.p.h., the control sections for cross-

ing protection installations must, of course, be lengthened to about 3,000 ft. for 90 m.p.h. and at least 3,200 ft. for 100 m.p.h. The C. & N. W. lengthened its control sections between Chicago and Milwaukee to approximately 3,000 ft.

A disadvantage introduced by lengthening these control sections for a few high-speed trains is that the signal operates too long for slower trains. For example, with a circuit set up for 90 m.p.h. a train moving at 45 m.p.h. would operate the signals 44 seconds and one at 30 m.p.h. would operate the signals 66 seconds. From a railway viewpoint, it would seem that a few seconds more delay for a highway vehicle should be of no consequence, in consideration of the fact that protection is being provided; however, vehicle drivers and highway authorities are clamoring for the development of some arrangement to provide uniform timing operation of crossing protection, regardless of whether the train is fast or slow, and the introduction of high speed trains is aggravating the situation.

The increased speed of trains also introduces additional hazards at highway crossings. On account of the increased weight of the trucks and trailers now operated on the highways, trains have been derailed when striking such vehicles on crossings. Therefore, in addition to preventing injury to highway users, the railroads are interested in preventing train wrecks. As a result, the installation of automatically-controlled protection at more crossings, including those handling a medium volume of motor traffic, seems to be imperative.

A Glance Into the Future

It is evident from what has been said, that when planning faster schedules, consideration must be given to the signaling. Furthermore, the vast majority of the automatic signaling on the railroads has been in service more than 25 years, having been installed to meet operating conditions entirely different from those of today. In the meantime, more powerful locomotives, heavier rail and better track, permitting the operation of longer trains at higher speeds, have been accepted as common practice. This disparity in signaling, as compared with motive power and track, has in many cases existed for years, and the operation of long freight trains at speeds of 50 m.p.h. really introduces conditions fully as hazardous as that of passenger trains in moving 90 to 100 m.p.h. Freight trains have been operated at these higher speeds on many lines for the last decade, and with a few exceptions, as for example on the Pennsylvania, little has been done to adapt the signaling to the new requirements. However, the introduction of the new passenger trains brought out the defects of the signal spacing and aspects so emphatically that modernization is now imperative on extended sections of a number of lines.

Modern Apparatus More Efficient

Even though the older models of signaling apparatus may have been maintained to operate as intended, the system falls short of meeting present requirements just as directly as do 80-lb. rail, or motive power 30 years old, because modern signaling properly located not only increases average train speeds with safety but provides the longer range aspects that are so necessary for higher train speeds. Furthermore, modern apparatus is more efficient with respect to operating and maintenance costs. The most important point is that many of the needed signaling improvements will effect economies with train operation and other operating costs sufficiently to more than justify the expenditure required.

Greater Freedom Needed by Railroads

DECLARING that what transportation needs now is less doctoring and more chance to develop along natural lines, R. V. Fletcher, general counsel of the Association of American Railroads, addressing a joint dinner of the Traffic Club and the Chamber of Commerce of Reading, Pa., on November 26, urged that the railroads be given more freedom from regulation so that they can exercise greater initiative in meeting present day conditions.

Mr. Fletcher said in part:

"I am pleading for a greater measure of freedom, now that we have all these competing forms of transportation—freedom to employ a greater measure of initiative in meeting conditions of today and those which the future may have in store. Present conditions demand a repeal of the long-and-short-haul clause of the fourth section, a statute which has been so applied as to give an unfair advantage to other forms of transportation not so restricted. If equality is to be the rule, and admittedly no other theory can indefinitely prevail, railroads should not be straightjacketed while the traffic goes to their competitors.

"The Panama canal Act should be repealed, leaving the railroads free to engage in competitive transportation on the waterways, if that course seems desirable and not prejudicial to the public interest. Clearly, the railroads should be freed from the restrictions imposed by the so-called labor clauses of the emergency transportation act, clauses which have been construed to cover joint arrangements in the interest of economy of the most usual type. Certainly the law should be repealed which prevents the elimination of through routes embracing lines, the inclusion of which, is justified by no consideration of economy. In my opinion, the rule against discrimination has been pushed entirely beyond its original purpose and to an extent that ignores the most familiar laws of commercial growth.

"I have come, somewhat hesitatingly, I admit, to the view that practice and procedure before the Interstate Commerce Commission are entirely too legalistic and cumbersome. Take for example the litigious procedure which accompanies the action of the commission when a rate change is suspended. I have some serious doubts as to whether the power of suspension should be lodged in the commission. But if mistaken in this tentative view, I see no reason why the parties could not be heard and the question decided in a somewhat summary fashion, without the use of long hearings, tentative reports, exhaustive not to say exhausting briefs and elaborate oral arguments. In other words, why can not the question be settled at an informal, business like conference, pitched upon the understanding that the commission is, in fact, an expert body, informed by experience and capable of acting intelligently without listening to endless harangues."

Mr. Fletcher endorsed the recommendation of the Federal Coordinator of Transportation that the Interstate Commerce Commission have a permanent chairman appointed by the President with defined administrative and executive authority. He said he believed that this would accomplish good in the way of assuring a continuous consistent policy.

"I mention these details," continued Mr. Fletcher, "merely to indicate some of the changes which, as I see it, may profitably be made in the regulatory system. My emphasis, however, is upon the general principle

that all forms of transportation would be stimulated and encouraged to go forward in progressive efforts to quicken and improve the situation, if they were not subject to so many restraints and prohibitions, and if they were allowed to conform their practices to the necessities of business."

Revision of the provisions in the transportation act dealing with consolidations of railroads so as to leave the railroads free to work out consolidations and operating agreements subject to the approval of the Interstate Commerce Commission, "unhampered by obsolete standards or statutes designed to force competition at the expense of economy" was also urged by Mr. Fletcher, who said that nothing substantial has been accomplished in this direction in fifteen years. "Voluntary consolidations," Mr. Fletcher said, "will not proceed normally as long as we retain in the law, as guides for the regulating body, standards which are inconsistent with rational business arrangements."

"There is a pretty general agreement among students of the subject that there can be no real order in the industry until all forms of transportation are on a substantial basis of equality as respects not only regulation but subsidies and taxes as well. I do wish to express the appreciation of the railroad industry for what Congress has done in the way of providing for the regulation of motor carriers in interstate commerce. There remains the task of placing the rates and practices of water lines under the jurisdiction of the Interstate Commerce Commission, in order that the task of regulation may be effectively carried on with due regard for consistency. In advocating the enactment of such a law, there is no disposition, on the part of the railroads, at least, to interfere with the subsidization of our merchant marine in foreign commerce. With vessels carrying freights overseas, neither the railroads nor the highway users have any concern. It is my contention that the regulation of our domestic commerce, sharply competitive with rail and highway transport, should be divorced entirely from the regulation of our foreign commerce, which alone it is proposed to subsidize in the interest of a healthy merchant marine.

"The future of transportation depends upon an enlightened public opinion, a clear understanding of the complexities of the problem and a firm grasp upon principles and objectives. The objectives are a well ordered system, under private ownership and control, where each form of transport will function in its proper field, as determined by considerations of economy and efficiency, all factors of cost, by whomsoever borne, being taken into account. This objective can be attained only by observing the rules applicable to all lines of business, which are based upon the minimum of public control and the maximum of individual initiative.

"Those who gloomily assert the inevitability of government ownership of railroads do so upon the theory that not otherwise can they perform the essential task of transportation. This belief is not based upon anything that has happened, certainly in recent years. Railroad transportation has been entirely satisfactory, so far as service is concerned, and in any event highway and waterway transport has been conveniently and abundantly available. The railroads, in spite of adversity, have speeded up both freight and passenger trains, have lowered their rates, increased the wages of their employees and decreased their unit costs appreciably. Doubtless, the same observation can truthfully be made as to their competitors on the highways and waterways. The transportation machine, in common with other forms of industrial enterprise, has learned a great deal from the depression and one of the most useful lessons

is one that has to do with how much the belt can be tightened without loss of energy.

"It has always seemed to me unfortunate that the transportation industry has so often been selected for exceptional legislative treatment. After all, this industry is but an auxiliary to business, an essential element in the process of production and consumption. Careful analysis will disclose no real reason why its management should be any more the business of Government than the growing of corn, the milling of grain or the manufacture of steel. If we are to have a healthy transportation system, we must no longer think of our railroads, our commercial trucks, our carrier boats, our pipe lines and our aeroplanes as things apart from our daily affairs, but as a part of our economic system, in which we are interested and for the condition of which we are responsible. This leads me to suggest that the transportation industry needs less doctoring and more of a chance to develop along natural lines, governed by economic rules which will be shaped by the growth and development of our civilization."

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 16 totaled 628,330 cars, a decrease of 25,195 cars or 3.9 per cent as compared with the week before but an increase of 43,296 cars, or 7.4 per cent, as compared with the corresponding week of last year. The principal increase was in the loading of miscellaneous freight, which was 35,816 cars more than the total for last year. All commodity classifications except coke showed reductions as compared with the previous week but all except coal and livestock showed gains over last year's figures. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, November 16

Districts	1935	1934	1933
Eastern	134,806	124,342	132,596
Allegheny	118,615	109,196	112,476
Pocahontas	47,262	42,162	41,706
Southern	90,047	89,759	88,094
Northwestern	81,526	72,845	71,611
Central Western	102,042	93,769	103,358
Southwestern	54,032	52,961	52,867
Total Western Districts	237,600	219,575	227,836
Total All Roads	628,330	585,034	602,708
Commodities:			
Grain and Grain Products	29,133	28,037	32,579
Live Stock	17,138	23,262	22,265
Coal	122,409	126,404	136,903
Coke	7,120	5,417	7,432
Forest Products	26,049	21,697	24,228
Ore	12,280	4,052	4,927
Merchandise L.C.L.	159,172	156,952	165,545
Miscellaneous	255,029	219,213	208,829
November 16	628,330	585,034	602,708
November 9	653,525	594,790	583,073
November 2	680,662	613,048	614,136
October 26	707,826	624,808	642,423
October 19	732,947	640,727	657,005
Cumulative Total, 46 Weeks	27,982,859	27,690,264	26,047,078

The freight car surplus for the last half of October averaged 208,158 cars, a decrease of 12,041 cars as compared with the first half of the month. The total included 125,339 box cars, 47,728 coal cars, 19,990 stock cars, and 5,652 refrigerator cars.

Car Loading in Canada

Car loading in Canada for the week ended November 16 totaled 48,684, as against 52,218 for the previous week

and 50,264 for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 16, 1935	48,684	21,519
November 9, 1935	52,218	22,455
November 2, 1935	52,177	22,715
November 17, 1934	50,264	19,359
Cumulative Totals for Canada:		
November 16, 1935	2,095,847	980,020
November 17, 1934	2,069,555	984,681
November 18, 1933	1,801,678	847,061

Flexible Competitive Rates on Sugar Authorized

WASHINGTON, D. C.

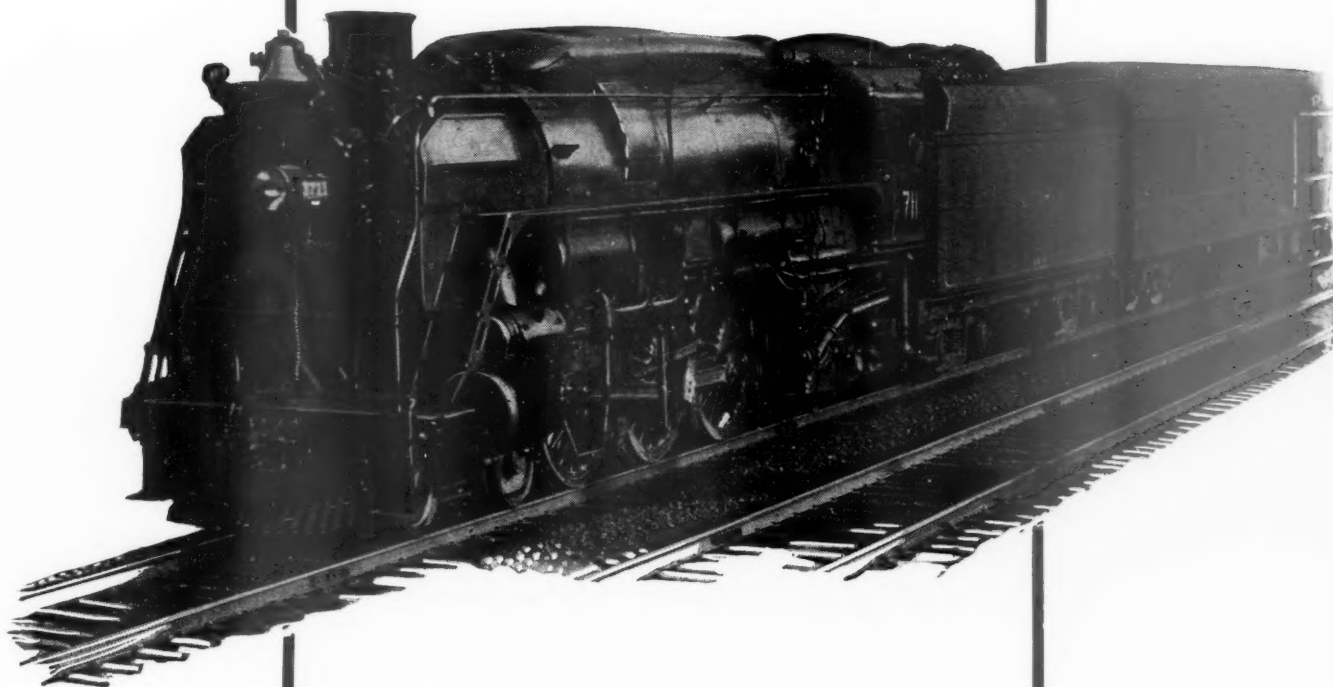
A FOURTH-SECTION relief order authorizing the trans-continental and western trunk line railroads to make further reductions in freight rates on sugar, in carloads, to Chicago, St. Louis, and adjacent territory, to meet the increasing competition of water transportation via the Panama canal and inland waterways, without reducing rates at intermediate points, has been issued by the Interstate Commerce Commission on further hearing on the railroad applications over the dissents of Commissioners Caskie, McManamy, and Porter. An interesting feature of the decision made public last week is that it grants the permission long sought by the railroads but heretofore denied in most cases for making further reductions, within prescribed limits, if the water lines attempt to meet the cut by further reductions in their own rates.

From San Francisco and other California points the transcontinental roads are authorized to establish and maintain on beet and cane sugar rates of 60 cents per 100 pounds subject to a minimum of 80,000 pounds per car and 65 cents, minimum 60,000 pounds, to Chicago, and rates of 58 cents and 63 cents, respectively to St. Louis and other destination territory to which the Federal Barge Line rate of 25.5 cents from New Orleans applies. Corresponding reductions are authorized to other points and fourth section relief was also granted to the western trunk lines on sugar from points in western trunk line and intermountain territory to Chicago and St. Louis, while the southern roads were given similar authority as to rates to Memphis, Tenn., Helena, Ark., and other points.

As to the transcontinental rates the order contains a provision "that if the all-water rate for continuous movement over standard lines shall be reduced below its present amount of 51.5 cents (composed of the standard ocean lines' rate of 26 cents to New Orleans and the standard barge lines' rate of 25.5 cents beyond), an equal reduction in the base rates herein authorized from California points to Chicago and St. Louis, with corresponding reductions in cents per hundred pounds in the related rates herein authorized, may be made, but no such base rate shall be reduced below 50 cents in connection with the 80,000 pound minimum and 55 cents in connection with the 60,000 pound minimum and applicants' tariffs naming all such reductions shall, at the time of filing with this commission, be accompanied by a detailed memorandum showing the basis on which the proposed reduced rates are constructed and setting forth the factors of the standard waterline rates upon which they are based." It is also provided that the present rates to the higher-rated intermediate points shall

Continued on next left-hand page

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Modern power provides 25 to 30 percent greater horsepower capacity as compared with locomotives built 10 or more years ago. It costs far less to operate and maintain and shows increased net earnings from passenger business.



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

not be increased except as may be authorized by the commission and shall in no case exceed the lowest combination of rates subject to the interstate commerce act and that the relief granted shall not apply to any line or route over which the distance exceeds the short tariff route by more than $33\frac{1}{3}$ per cent.

The commission had previously authorized a reduction of the transcontinental rate to 65 cents, minimum 60,000 pounds, predicated upon water competition via the Panama canal to New Orleans, or New York, thence by barge, barge-and-lake, or barge-and-rail to the destination territory, but the railroads sought a further hearing and authority to reduce the terminal rate from time to time as rates via the competing water routes are reduced, subject to ultimate minimum rates of 48 cents with the 80,000-pound minimum and 53 cents with the 60,000-pound minimum. The eastern and southern carriers and the Atlantic and Gulf refiners then modified their position to the extent of not opposing reductions which preserve substantially the existing relations in all-rail rates from various origin points. The eastern lines have pending an application for similar relief. The report shows that while water lines in 1929 carried about 25 per cent of the sugar traffic from San Francisco Bay points to the destination territory, in 1933 their proportion had increased to nearly 81 per cent, and says that the evidence "conclusively shows that the 65 cent rate is too high to permit the rail lines to compete effectively with the water carriers." The maximum rate in effect to intermediate points is 84 cents.

Commissioner Porter, dissenting, said he believed "this is simply the beginning of what in effect is a rate war between the rail carriers serving the various parts of the country and a rate war as between all the rail carriers and the water carriers" and that by granting the applications the commission is morally binding itself to grant a substantial reduction with fourth section relief from eastern and southern ports.

In discussing the need for "flexible relief" to meet water competition the majority opinion said in part:

Protestants say upon brief that barge rates are ordinarily 80 percent of the rail rate, and point out that 80 percent of the present rail rate of 65 cents is 52 cents, or within .5 cent of the sum of the present all-water rates of 26 cents to New Orleans and 25.5 cents beyond. They further say, in another connection however, that the tonnage now moving all-rail would continue to move all-rail under any adjustment. In other words, the transcontinental lines are now hauling only that portion of the traffic which is non-competitive. Considering the latter to be true, it plainly demonstrates that the relation of 80 percent represents too great a spread to enable the rail carriers to retain any portion of the business which it is possible to move by water. On the other hand, it seems obvious that a rail rate with a minimum of 80,000 pounds, which exactly equalizes the all-water rate, the ocean portion of which is subject to a minimum of 500 tons, would attract all the traffic away from the water carriers. Keeping in mind the fact that we are here dealing with subnormal rail rates, a rate adjustment under which both rail and water transportation might be fostered and preserved in full vigor we conceive to be one under which the spread in rates would be narrow enough, and yet wide enough, to permit of a competitive relation as between the two classes of carriers. In order for a competitive relation to exist between the two methods of carriage, it is evident that there must be some differential in favor of the less desirable mode of transportation. But it is equally apparent from the evidence herein as to the shifting of the competitive traffic from the one to the other mode of transportation that a narrower spread than that now existing is necessary in order to maintain such a competitive relation. What that spread must be cannot be determined by any mathematical formula, and we believe can only be determined by the method of trial and error. We shall therefore fix a relation which, upon the present evidence, in our best judgment represents the spread necessary to bring about a competitive relation between the two classes of carriers. Should experience prove our judgment to be

in error, a petition from either side making a proper showing will open the door for a further consideration of the matter.

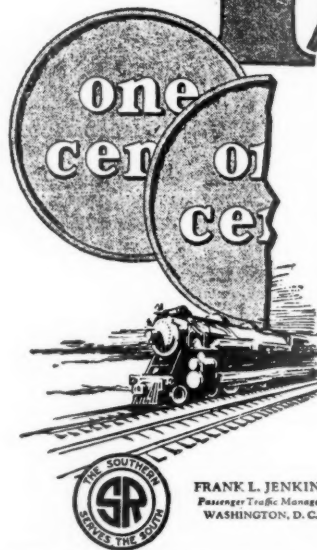
Upon exceptions applicants contended that our reasoning in the preceding paragraph presupposes that this Commission must protect the all-water lines against the competition of the rail lines, which premise, they claim, is unfounded in law. Applicants' conclusion does not necessarily follow. The issue herein is whether we shall exercise our discretion to grant authority to applicant rail line to maintain subnormal rates; and the foregoing reasoning goes directly, and for our present purposes, solely, to the question of how low the rates must be in order to meet the necessities of the circumstances which make subnormal rates imperative if applicants are to get any of the business which could be competitive. We see no sufficient reason why, under section 4 (1) of the Interstate Commerce Act, we should grant permission to maintain rates lower than the necessities of the case require. Furthermore to approve lower rates to the more distant points than are justified by the competition at those points would be to approve unduly preferential rates in contravention of section 3 of the act.

The desirability of relief of the flexible nature sought, that is, authority to reduce the rail rates from time to time to maintain a constant relation to the all-water rate, subject to some reasonably compensatory minimum, is evident. During the time necessarily required for the filing, hearing and decision of an application for modified relief after a reduction in the all-water rate, much or all of the competitive traffic could be lost to the rail lines, as has occurred in the present instance. Applicants suggest willingness that our order require that at the time of filing tariffs naming further reductions the rail lines accompany the same with a detailed memorandum showing the basis upon which the proposed rates are constructed, and setting forth the factors of water-line cost upon which they are based. With such information we would be in a position to pass upon any requests that might be made for suspension of the proposed reductions. We shall embody this suggestion in our order.

* * *

Travel anywhere...any day on the SOUTHERN

for **1 1/2¢** per mile



Save by using the Southern at the lowest fares ever offered:

1 1/2¢ per mile—in Coaches

One way tickets—sold daily to any point on the Southern

2¢ per mile round trip in sleeping and parlor cars
each way in
Return limit 15 days

2 1/2¢ per mile round trip in sleeping and parlor cars
each way in
Return limit 30 days

3¢ per mile one way in sleeping and parlor cars

NO SURCHARGE!

Your trip on the Southern will be quicker, safer—and more economical! No tires to change; no trucks to dodge; none of the hazards, bother and expense of driving your own car. Be comfortable in the safety of train travel.

A. M. CRAWFORD, Asst. Gen. Pass. Agt.
105 N. 20th St. Phone 7-2129

FRANK L. JENKINS
Passenger Traffic Manager
WASHINGTON, D. C.



SOUTHERN RAILWAY SYSTEM

How the Southern Advertises Its Reduced Passenger Fares

News Department begins on next left-hand page

PROFITABLE SERVICE . . .



that attracts passenger business



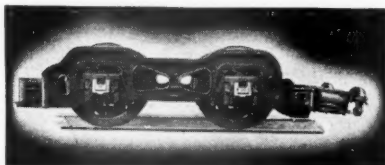
High speeds, comfort, and safety of modern trains has attracted a tremendous increase in passenger travel during the past 18 months.

To maintain such schedules locomotives of high horsepower capacity are required for high speed schedules and high starting ability to handle heavy trains and quickly accelerate to road speed.

The Locomotive Booster, by capitalizing idle weight and spare steam, enables the locomotive to get to road

speed smoothly and quickly and is a material aid in reducing time between terminals. This added starting capacity permits small cylinders and lighter weight parts and materially reduces both operating and maintenance costs both to power and roadbed.

In the competition for passenger business The Locomotive Booster is an important factor in providing improved service at a cost that leaves a worth-while profit to the railroad.



The close tolerances essential to effective Booster operation call for genuine repair parts made by Franklin.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTREAL

NEWS

Denver & Salt Lake Western Admitted to Trusteeship

The Denver & Salt Lake Western, wholly-owned subsidiary of the Denver & Rio Grande Western, which was organized to construct the Dotsero Cutoff, joined its parent company on November 19, in reorganization proceedings under Section 77 of the federal bankruptcy amendment when, over the opposition of the Reconstruction Finance Corporation, United States District Judge J. Foster Symes approved the petition of the smaller company to come under the jurisdiction of the federal court. The judge announced that he would appoint a trustee later and at the same time indicated that every effort would be made to prevent the abandonment of the Dotsero Cutoff and to maintain existing contractual relations by virtue of which the cutoff is being operated by the Denver & Rio Grande Western. The court found that the Denver & Salt Lake Western is unable to pay its debts as they mature and is entitled to the relief it asks.

The R.F.C. opposed the trusteeship because of its financial interest in the Dotsero Cutoff, the subsidiary owing the R.F.C. \$3,182,000 on a demand note for the construction of the cutoff. The stock issued by the Denver & Salt Lake Western was pledged to secure loans from the R.F.C. to finance the building of the cutoff.

C. M. Clay, counsel for the railroad division of the R.F.C., contended that the fact that the R.F.C. holds a demand note is no evidence that the company is unable to pay its debts as they mature. The note, he said, may not be demanded for 10 years and the company has been able to keep up its interest payments and can continue to make payments if the Denver & Rio Grande Western keeps up its lease agreement. Judge Symes declared the trusteeship would not affect the position of the R.F.C. and its rights will be recognized along with other creditors. Henry McAllister, general counsel for the newly appointed trustees of the Denver & Rio Grande Western, suggested that these same trustees be designated to take charge of the Denver & Salt Lake Western.

New System of Depreciation Accounting Proposed for Express Companies

Examiner A. M. Bunten of the Interstate Commerce Commission has submitted to the commission a proposed report recommending that the commission prescribe a system of depreciation accounting for express companies, covering their buildings and equipment accounts, to become effective on January 1, 1937. The proposed findings would impose a system somewhat similar to that ordered for rail-

Highway Transport Benefits from Huge Equipment Price Decline

Seven years ago a one-ton truck cost in the neighborhood of \$1,000. It had four cylinders of very moderate horsepower, weighed about 2,400 pounds, had a gross capacity of 5,100 pounds and would satisfactorily carry about one ton—not much more.

Today a similar chassis is called a 1½ ton truck and costs in the neighborhood of \$600. It has a gross rating of twice as much as the 1928 truck (11,000 pounds) and even when loaded to its rated capacity, will carry three tons and is sometimes forced to stagger along under a good deal more. In other words, a truck which can be purchased for 40 per cent less money today will carry three times as much as the truck costing \$1,000 seven years ago. Then compare the daily mileage demanded of these trucks. Federal records show an average of 40 miles per day in 1928, while in 1935 400 miles per day is not uncommon.

From "Power Wagon"

[An accompanying table shows the cost of trucks per lb. of pay load at 50 cents in 1928 and only 10 cents in 1935.]

road companies, modified to make it applicable to the express companies. The report shows that in 1934 the Railway Express Agency, Inc., had a depreciation reserve of \$26,913,864, or 66.81 per cent of its investment in buildings and equipment, and that the Southeastern Express Company had a similar reserve of \$827,422, or 67.3 per cent of the investment. The chief objection of the companies to the order proposed in the notice of hearing involved the application of the group method of accounting for depreciation, which is now recommended. They had urged the unit plan which has been followed for 20 years.

Club Meeting

The Central Railway Club of Buffalo will hold its next meeting at the Hotel Statler, Buffalo, on Thursday evening, December 5. The speaker will be Samuel G. Hibben, director of applied lighting of the Westinghouse Lamp Company, and his subject will be "New Lighting Tools for Tomorrow's Job." Ladies are invited to attend this meeting, and there will be entertainment by the C. R. C. chorus. The election of officers for 1936 will take place.

The forty-seventh annual dinner of this club will be held on Thursday, January 9.

Grade Crossing Plans Approved in 41 States

Plans for grade crossing projects in 41 states at an estimated cost of \$31,352,000 had been approved by the Bureau of Public Roads up to November 23 and contracts had been awarded in 35 states to the amount of \$11,580,730. Contracts amounting to \$2,381,206 were awarded during the week.

The President has approved a program submitted by the State Roads Commission of Maryland covering 17 grade crossing elimination or protection projects at an estimated cost of \$1,860,000 of the funds apportioned by the Secretary of Agriculture to the state for that purpose. As the total apportionment to the state was \$2,061,751 there remains a balance of \$201,751 to be covered by later programs.

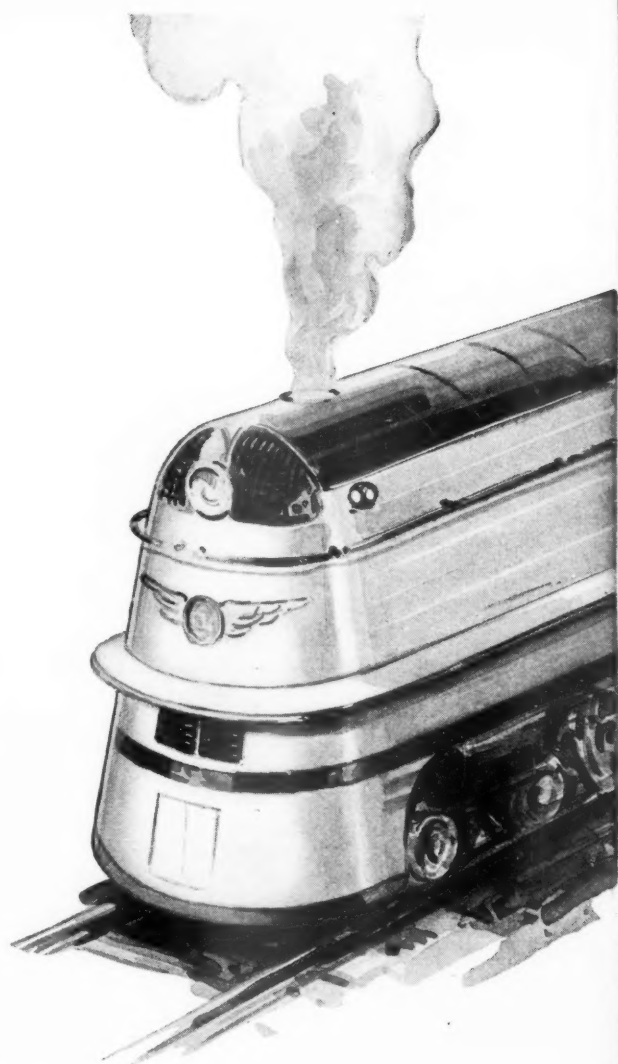
A program submitted by the State Highway Department of Texas approved by the President covers 72 grade crossing projects and \$5,180,840 of the funds apportioned to the state for the purposes. As the total apportionment was \$10,855,982 there remains a balance of \$5,675,142 to be covered by later programs.

A program submitted by the Department of State Highways of North Dakota, approved by the President, involves 12 grade crossing projects and \$736,000 of the \$3,207,473 apportioned to the state, leaving a balance of \$2,471,473 to be covered by later programs.

A program submitted by the State Department of Highways of Ohio, approved by the President, involves 36 grade crossing projects and \$7,010,598 of the \$8,439,897 apportioned to the state for this purpose, leaving a balance of \$1,429,299 to be covered by later programs.

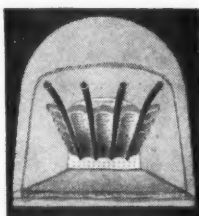
Special Agents Hold Annual Dinner

State senators and representatives, railroad executives, city and county law enforcement officers, mayors and chiefs of police of all nearby cities and towns, and sheriffs of surrounding counties, were guests at the annual banquet of the Chicago Railway Special Agents and Police Association at the Hotel Sherman, Chicago, on November 21. This year's banquet, attended by approximately 600 persons, is the largest in the history of the association. At this banquet, the purpose of which is to foster closer relationship between railroad and municipal law enforcing organizations, Michael L. Iggoe, United States district attorney, acted as toastmaster. H. G. Taylor, chairman of the Western Association of Railway Executives, and Otter Kerner, attorney general of Illinois, were the principal speakers. Arthur H. Bishop of Scotland Yard re-



*There's More to
SECURITY ARCHES
Than Just Brick*

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



KEEP YOUR BRICK ARCHES

Up-to-date

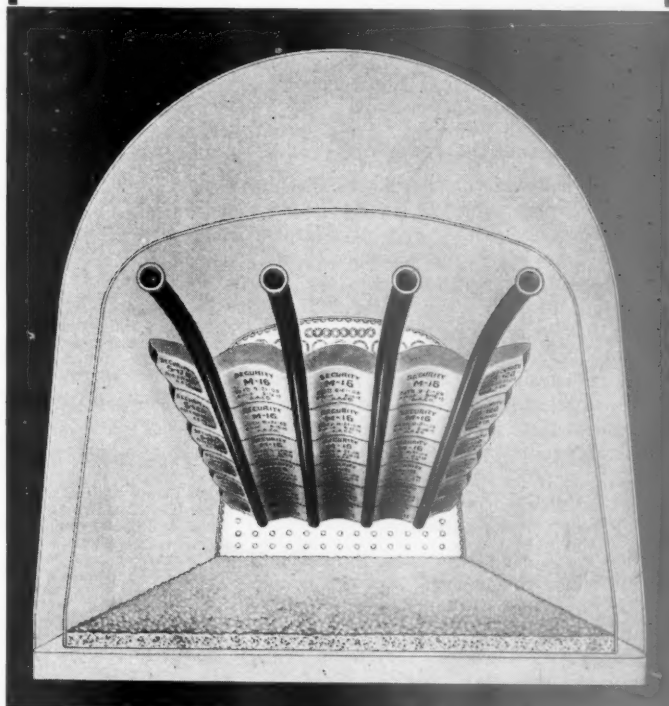
The locomotive arch is an engineering specialty that must be designed for the conditions under which it must work.

When power is modernized, conditions may be changed.

Redesigning the arch to function under the new conditions is just as important as the original design.

American Arch Company engineers have years of experience in combustion problems.

This experience and knowledge is at the service of the railroads.



AMERICAN ARCH CO.
INCORPORATED

*Locomotive Combustion
Specialists* * * *

sponded to an introduction by the toastmaster. Mr. Taylor gave a comprehensive outline of the problems of the railroads.

Pollock Made Secretary of Colorado Public Utilities Body

Earle E. Pollock, of Denver, has been appointed secretary of the Colorado Utilities Commission, to fill the vacancy created by the recent death of John W. Flintham.

Pullman Valuation Case Re-Opened

On application of the company the Interstate Commerce Commission has ordered that the proceedings in connection with the valuation of the property of the Pullman Company be re-opened and assigned for re-argument before the commission.

Football Travel

The Pennsylvania reports that the passengers carried to Princeton, N. J., for the Princeton-Dartmouth football game on November 23, numbered 15,947, as compared with 3,555 to the same game last year, indicating, it is believed, a revival of the popularity of railroad travel and appreciation of its convenience and speed. From New York 23 trains were run, which, with those from other cities, used 298 cars.

Railroad Representatives on Joint Rail-Truck-Shipper Committee

The Association of American Railroads has appointed A. F. Cleveland and J. M. Symes, vice-presidents respectively of its Traffic and Operating departments, as railroad representatives on the joint conference committee, representing railroads, truck operators, and shippers, being formed at the suggestion of the American Trucking Associations.

Railroad Income Taxes for 1933

Of 605 railroad companies that filed income tax returns for 1933, according to a table released by the Treasury Department, 150 having a gross income of \$65,515,000 paid income taxes for the year amounting to \$9,051,000, while 382 companies, having a gross income of \$3,084,778,000, had a deficit of \$345,848,000. Excess profits tax payments by railroads amounted to only \$40,000. There were 73 companies that filed returns as inactive corporations showing no net income.

Union Pacific's New Train to Start in April

The two 11-car streamlined, light-weight trains being constructed for the Union Pacific by the Pullman-Standard Car Manufacturing Company will be delivered in March and placed in service in April between Chicago and Los Angeles, Cal., and Chicago and San Francisco, Cal. The Streamliner-City of Portland, which was taken out of service three months ago, will resume service between Chicago and Portland, Ore., around January 1.

Melville Medal Awarded O. R. Wikander

The Melville Medal for 1935 has been awarded O. R. Wikander by the American

Society of Mechanical Engineers for his paper on Draft Gear Action in Long Trains. The paper, presented at the 1934 annual meeting, covers investigations sponsored by the Edgewater Steel Company, Pittsburgh, Pa.

The medal is provided by an endowment established by Rear Admiral George W. Melville, a past president of the Society.

Sees Good Season for Florida Passenger Business

Passenger traffic officers of the Southern see "every indication of a very substantial increase in Florida travel for the 1935-36 season", according to a recent announcement of that road's Florida train services. Florida travel, it adds, is starting exceptionally early and a number of extra and private cars have already been handled. Travelers are also taking advantage of the ticketing plan for their automobiles. Only one ticket at 3.6 cents per mile is now required for the transportation of an auto-

mobile, provided it is accompanied by two passengers holding tickets good in sleeping or parlor cars at current one-way or round-trip fares.

Railroad Fixed Charges Earned in September

Class I railroads in September earned a net income of \$13,542,934 after interest rentals and other fixed charges, according to the Interstate Commerce Commission's monthly compilation of selected income and balance-sheet items. This is the first month of 1935 in which the railroads did not have a deficit and reduces the cumulative net deficit for nine months to \$66,671,687, as compared with a deficit of \$33,903,519 for the corresponding period of last year. In September, 1934, there was also a deficit of \$1,179,163. Only 14 of the 50 large roads, those having annual operating revenues above \$25,000,000, however, earned their fixed charges for the nine months period. Total current liabilities at the

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 143 Reports (Form IBS) Representing 149 Steam Railways

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For month of September 1935		For the nine months of 1935	
1934		1934	
		Income Items	
\$57,359,249	\$41,713,426	1. Net railway operating income.....	\$321,994,749
12,117,707	13,398,438	2. Other income	115,829,706
69,476,956	55,111,864	3. Total income	437,824,455
1,254,951	1,523,843	4. Miscellaneous deductions from income	12,832,601
68,222,005	53,588,021	5. Income available for fixed charges....	424,991,854
		6. Fixed charges:	
		6-01. Rent for leased roads.....	100,134,141
		6-02. Interest deductions	380,492,382
		6-03. Other deductions	2,016,862
		6-04. Total fixed charges.....	482,643,385
11,523,204	11,217,457	7. Income after fixed charges.....	\$ 57,651,531
41,932,940	42,315,875	8. Contingent charges	9,020,156
222,625	233,638	9. Net income*	\$ 66,671,687
53,678,769	53,766,970	10. Depreciation and retirements.....	145,117,128
14,543,236	\$ 178,949	11. Federal income taxes.....	12,783,949
1,000,302	1,000,214	12. Dividend appropriations:	
13,542,934	\$ 1,179,163	12-01. On common stock.....	58,114,765
16,183,720	15,803,674	12-02. On preferred stock.....	12,655,620
1,913,884	1,226,165		
5,065,192	2,386,462		
1,039,712		
		Balance at end of September	
		1935	1934
13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707).....		\$734,653,134	\$760,054,083
14. Cash		\$397,838,152	\$312,122,190
15. Demand loans and deposits.....		14,032,671	37,998,134
16. Time drafts and deposits.....		32,526,047	40,690,412
17. Special deposits		64,392,854	56,568,743
18. Loans and bills receivable.....		4,095,552	6,305,184
19. Traffic and car-service balances receivable.....		56,367,750	50,000,473
20. Net balance receivable from agents and conductors.....		49,285,692	46,236,421
21. Miscellaneous accounts receivable.....		134,685,128	151,492,945
22. Materials and supplies.....		285,785,731	308,288,593
23. Interest and dividends receivable.....		34,926,819	44,991,559
24. Rents receivable		2,928,117	3,510,824
25. Other current assets.....		5,462,714	4,323,270
26. Total current assets (items 14 to 25).....		\$1,082,327,227	\$1,062,528,748
		Selected Liability Items	
27. Funded debt maturing within 6 months†.....		\$243,607,694	\$107,506,476
28. Loans and bills payable.....		\$344,232,829	\$296,694,005
29. Traffic and car-service balances payable.....		73,014,739	66,368,439
30. Audited accounts and wages payable.....		214,099,880	217,656,119
31. Miscellaneous accounts payable.....		59,992,430	62,894,999
32. Interest matured unpaid.....		395,075,096	305,366,786
33. Dividends matured unpaid.....		15,550,650	16,211,046
34. Funded debt matured unpaid.....		321,338,273	274,433,153
35. Unmatured dividends declared.....		1,182,783	1,123,121
36. Unmatured interest accrued.....		106,510,427	106,629,306
37. Unmatured rents accrued.....		32,303,412	31,451,376
38. Other current liabilities.....		17,770,767	19,081,145
39. Total current liabilities (items 28 to 38).....		\$1,581,071,286	\$1,397,909,495
40. Tax liability (Account 771):			
40-01. U. S. Government taxes.....		\$33,070,238	\$31,786,378
40-02. Other than U. S. Government taxes.....		158,886,129	164,032,805

* September, 1935, income, as reported, was increased by credits to operating expenses on account of reversal of charges previously made for liability under the Railroad Retirement Act. These credits for September, 1935, amounted to \$316,168, and for the nine months ended with September, 1935, the net credit is \$7,284,425. For September, 1934, the reported net income includes charges because of the Retirement Act amounting to \$2,758,922, and for the nine months ended with September, 1934, the charges included are \$5,575,523.

† Includes payments which will become due on account of principal of long-term debt (other than Account 764, Funded debt matured unpaid) within six months after close of month of report.

‡ Includes obligations which mature not more than 2 years after date of issue.

§ Deficit.

Continued on next left-hand page

THE SUPERHEATER COMPANY

NEW YORK



CHICAGO

Buying Equipment Specialties

As the result of improvements developed over a period of years and a persistent demand for increased economy and safety of operation, construction of locomotives and cars today involves numerous special devices. In the case of locomotives, these run from a minimum of 20 up to as high as 35, each with its own special function. Most of these specialties are thoroughly justified from an operating viewpoint and some of them are outstanding because of actual economies they effect. However, the cost of the specialties desired and recommended by the mechanical officer often runs the total cost of equipment to proportions that appear to be out of bounds. If lower costs are then sought, often the specialties that look like a big expenditure in dollars and cents, are taken out of the specification - - - but these may be the principal factors in making the complete unit a real investment on the part of the railroad.

The mechanical officer who decides or passes on the equipment finally, naturally has in mind mainly its complete performance as a unit. The purchasing agent, on the other hand, is responsible for the costs involved and it is his job to keep them within reason. In elimi-

nating the application of specialties to equipment, however, the fact should not be lost sight of that the cost of a device which may seem high when new, spread over the life of a piece of equipment will, in most cases be comparatively small. This makes it possible for the specialty to return its value many times over through increasing the efficiency of the unit to which it is applied. In the application of specialties, also, the reliability of the manufacturer should not be forgotten but should play an important part in the selection of special devices as he must be in a position to stand back of his product through its service life.

From an investment viewpoint, especially where heavy equipment and enormous expense are involved, it is well to think in terms of the whole unit and its ultimate service to the railroad. In this the railway supply department can play an important part as it has learned to take into consideration the full picture of the service life of a unit, due to its interest in and very complete records of repair part purchases. It is most important that not only the first cost but the whole service picture be taken into consideration in purchasing either commodities or equipment.

Railway Purchases and Stores—October 1935 (page 455)

NEW YORK
60 East 42nd St.

MONTREAL
The Superheater Co., Ltd.
Dominion Square Bldg.

CHICAGO
Peoples Gas Bldg.

REPRESENTATIVE OF AMERICAN THROTTLE COMPANY, INC.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE \$25,000,000

Name of railway	Net income after depreciation and retirements		Net income before depreciation and retirements	
	For the 9 months of 1935	1934	For the 9 months of 1935	1934
Alton R. R.	\$2,083,313	\$1,167,460	\$1,834,509	\$1,035,540
Atchison, Topeka & Santa Fe Ry. System†	4,057,289	5,632,758	12,559,625	14,252,922
Atlantic Coast Line R. R.	1,476,618	338,641	232,812	1,895,225
Baltimore & Ohio R. R.	3,334,021	2,571,029	1,956,258	3,172,143
Boston & Maine R. R.	510,982	795,043	731,532	409,439
Central of Georgia Ry.	1,887,262	2,044,089	1,270,161	1,455,799
Central R. R. of New Jersey	1,426,425	1,062,244	171,674	456,726
Chesapeake & Ohio Ry.	20,456,043	20,740,348	26,655,404	26,034,158
Chicago & Eastern Illinois Ry.	1,405,797	1,284,637	949,538	970,609
Chicago & North Western Ry.	9,912,892	6,533,966	6,047,408	3,136,065
Chicago, Burlington & Quincy R. R.	2,402,926	2,359,255	1,119,514	4,751,208
Chicago Great Western R. R.	1,040,411	487,133	650,357	110,264
Chicago, Milwaukee, St. Paul & Pacific R. R.	16,376,964	12,186,858	12,168,873	7,026,277
Chicago, Rock Island & Pacific Ry.	11,781,295	8,897,269	8,399,691	5,403,702
Chicago, St. Paul, Minneapolis & Omaha Ry.	2,034,060	1,204,118	1,559,597	783,311
Delaware & Hudson R. R.	1,942,003	2,426,064	1,146,004	1,601,935
Delaware, Lackawanna & Western R. R.	2,797,944	1,260,493	703,009	668,091
Denver & Rio Grande Western R. R.	3,531,730	2,376,768	2,634,767	1,608,490
Elgin, Joliet & Eastern Ry.	878,581	643,585	1,552,591	43,280
Erie R. R. (including Chicago & Erie R. R.)	1,659,346	18,285	1,413,667	3,460,470
Grand Trunk Western R. R.	542,263	921,780	264,325	224,009
Great Northern Ry.	1,425,633	3,529,752	3,988,218	847,706
Illinois Central R. R.	3,825,207	1,079,232	1,331,455	3,944,045
Lehigh Valley R. R.	2,068,272	2,038,505	234,468	561,810
Long Island R. R.	769,929	199,267	52,770	936,636
Los Angeles & Salt Lake R. R.	52,690	496,236	593,145	1,048,028
Louisville & Nashville R. R.	2,369,703	1,950,709	5,563,645	5,068,314
Minneapolis, St. Paul & Sault Ste. Marie Ry.	4,436,771	4,026,239	3,575,896	2,935,290
Missouri-Kansas-Texas Lines	3,173,502	1,867,062	2,201,397	1,137,444
Missouri Pacific R. R.	12,295,998	9,915,925	9,073,252	6,333,631
New York Central R. R.†	6,385,081	4,688,689	6,098,703	6,800,539
New York, Chicago & St. Louis R. R.	148,414	251,549	1,381,053	1,280,179
New York, New Haven & Hartford R. R.	2,618,872	3,730,880	22,807	722,621
Norfolk & Western Ry.	16,540,778	14,901,456	19,631,054	18,673,217
Northern Pacific Ry.	6,395,742	2,343,669	3,946,457	160,424
Oregon Short Line R. R.	893,583	492,585	1,641,272	1,334,163
Oregon-Washington R. R. & Navigation Co.	2,234,592	2,260,932	1,798,119	1,789,815
Pennsylvania R. R.	14,335,602	15,039,409	30,047,705	30,684,804
Pere Marquette Ry.	417,642	4,186	2,354,777	1,679,747
Pittsburgh & Lake Erie R. R.	2,341,261	2,123,458	3,709,311	3,875,063
Reading Co.	3,224,483	4,364,856	5,549,907	6,720,385
St. Louis-San Francisco Ry.	8,408,417	5,680,034	6,069,692	4,241,988
St. Louis Southwestern Lines	598,913	771,305	130,777	389,437
Seaboard Air Line Ry.	5,646,653	5,922,726	4,240,907	4,613,246
Southern Ry.	2,975,278	3,197,586	716,694	887,663
Southern Pacific Transportation System§	2,057,355	1,588,943	3,660,611	4,199,350
Texas & Pacific Ry.	582,908	634,413	1,490,570	1,535,837
Union Pacific R. R.	9,574,253	13,367,487	12,598,399	16,717,146
Wabash Ry.	2,508,145	2,601,552	871,321	1,264,048
Yazoo & Mississippi Valley R. R.	1,124,395	1,689,381	716,669	1,273,231

* Deficit.

† Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry. and Panhandle & Santa Fe Ry.

‡ Includes Boston & Albany, Michigan Central, and Big Four Lines, lessors to New York Central R. R.

§ Includes Southern Pacific Company and Texas & New Orleans R. R.

end of September amounted to \$1,581,071.-286, while total current assets were only \$1,082,327,227. The commission's summary is given in the accompanying table.

The Pennsylvania's Fishing Information Bureau

William Schaaf and Walter R. Willis, who operate the well-known Fishing Information Bureau of the Pennsylvania, at Pennsylvania Station, New York City, which has done important service for fishermen going out on the Long Island Railroad, have now enlarged their field and propose to give similar service to sportsmen going to Florida and other southern fishing grounds. They will include the principal points of interest to fishermen on the Seaboard Air Line, the Atlantic Coast Line and the Florida East Coast. The bureau will furnish information regarding railroad transportation, hotels, boats, bait and tackle, and will keep in constant touch, by wire, of fishing conditions at all times.

Traffic Course in High School

A special 12-weeks commerce course will be offered at the Soldan High School, St. Louis, Mo., one evening a week from January 9 to March 26, the course being established by the St. Louis Board of Education in co-operation with the Traffic Club of St. Louis. The traffic club has, for a

number of years, sponsored a two-year traffic course, now offered at the Hadley Vocational School, and the new course is planned to supplement that activity. Instruction will be given in the preparation and handling of cases before the Interstate Commerce and State commissions and also other more advanced subjects not included in the two-year traffic course. A nominal charge will be made to cover the cost of text material and additional compensation for instructors.

Investigation of Diesel Locomotive Fire Not Completed

The final conclusions as to the exact causes of the fire which interrupted a test run of the Santa Fe "Superchief" on November 20, as reported in the *Railway Age* of November 23, have not yet been developed. The locomotive was held for several days at Gallup, N. M., for a careful examination of all parts which could be inspected. However, none of the parts was disassembled as this part of the investigation will be made at the plant of the Electro-Motive Corporation, La Grange, Ill., where representatives of the Atchison Topeka & Santa Fe, the I. C. C. Bureau of Locomotive Inspection and the locomotive builder will be present.

The fire, which occurred in the forward unit of the 3600-hp. Diesel-electric locomotive hauling the test train did not

damage the rear unit and only one of the Diesel motors in the front unit was damaged to any extent. The locomotive pulled a train back to Chicago, arriving November 26 and the damaged unit was then taken to the Electro-Motive Corporation plant for the disassembly inspection.

Daniel Willard Makes New Service Record

Daniel Willard, president of the Baltimore & Ohio, on November 25, became that railroad's chief executive with the longest tenure of office. This distinction was formerly held by John W. Garrett, civil war president of the B. & O., whose administration lasted from November 17, 1858, to September 26, 1884, or 25 years, ten months and nine days.

Mr. Willard's length of service equaled that record on November 24, since he was made the B. & O.'s president January 15, 1910. At the meeting of the road's board of directors last week, in New York, he was re-elected president for his twenty-seventh term.

Co-Operative Program to Reduce Accidents Proposed

Secretary Roper of the Department of Commerce has announced, at the suggestion of the President, plans for a conference with a group of outstanding business and public men interested in the reduction of accidents on land and sea and in the air looking to the formation of a definite co-operative program to reduce accidents. As chairman ex-officio he said the conference would be held at an early date and that he would submit at that time a program for study dealing chiefly with causes of accidents and suggested remedies for them. He emphasized that his plan contemplates utilization of organized safety groups throughout the nation. W. Averill Harriman, chairman of the Union Pacific, will head a group on Co-operation with Common Carriers.

Employment Statistics for September

Class I railroads, excluding switching and terminal companies, reported to the Interstate Commerce Commission a total of 1,008,606 employees as of the middle of September, 1935, and a total compensation of \$136,971,315. The number was 9,735, or .96 per cent less than the number reported for September, 1934. The total number of hours paid for was .7 per cent greater and the total compensation 8.24 per cent greater in September, 1935, than in September, 1934. This reflects the higher basis of wages in 1935. A comparison of the number of employees who received pay during the month, 1,119,851, with the total hours paid for, shows an increase from 172 hours per employee in September, 1934, to 176 in September, 1935, or 2.33 per cent. In the case of machinists there was an increase from 154 to 158 hours, or 2.6 per cent.

Frisco Issues Sales Bulletins

The St. Louis-San-Francisco is issuing "Frisco First", a tabloid-type house organ, each month, the first issue being that of November. The new four-page publication supplants the traditional style of railroad magazine and contains signed articles by executives of the railroad, written in in-



AMERICAN LOCOMOTIVE COMPANY IT CAN BE DONE! 30 CHURCH STREET NEW YORK N.Y.

ON the Milwaukee the problem was not how cheaply could they operate with the volume of passenger traffic that was handled early in 1935 — They refused to believe that the early 1935 volume was static — They still could picture the volume of passenger traffic that they handled in the good old days — And they believed that with the right incentive some of those lost passengers could be persuaded again to patronize their road . . . As a famous American so often said — "Let's look at the record" . . . The Hiawatha went into service May 29th. On November 4th, 160 days later, the one hundred thousandth paying passenger traveled on this train . . . 100,000 paying passengers in 160 days — nothing theoretical about this figure — it was actually done — and done in 1935 . . . It seems to us that the question as to whether passengers can be induced again to patronize the rails has been answered. What do you think?

ALCO

formative and inspirational editorial style. Some of the typical departments are: Face Cards, or personal items; People Are Gathering, or a list of conventions; The Pen Is Mightier, devoted to letters from readers; Facts for Your Sales Kit, written by the general traffic manager; The Story in Picture, or news pictures.

According to J. R. Coulter, general traffic manager, this form of house organ is adopted to keep employees posted and "on their toes" as advancements come, and is intended to contribute toward a better type of salesmanship.

New Equipment

Class I railroads in the first ten months of 1935 installed 4,792 new freight cars, according to reports compiled by the Association of American Railroads. In the same period last year, 21,671 new freight cars were placed in service and in the same period two years ago there were 1,872. Thirty-one new steam locomotives and 102 new electric locomotives were placed in service in the first ten months of this year. The railroads, in the first ten months of 1934, installed 22 new steam locomotives and 16 new electric locomotives.

New freight cars on order on November 1 totaled 6,433 compared with 3,080 on the same day in 1934 and 127 on the same day in 1933. The railroads also had on order 11 new steam locomotives and 3 new electric locomotives. New steam locomotives on order on November 1, 1934, totaled 34, and on the same date in 1933, there was 1. New electric locomotives on order on November 1, 1934, totaled 101. No reports are available as to the number on order on November 1, 1933. Freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Discussion of Timber and Allied Subject on A. S. M. E. Program

In addition to the many papers on mechanical subjects to be presented at the general sessions of the annual meeting of the American Society of Mechanical Engineers, to be held in New York, December 2 to 5, inclusive, as reported in the *Railway Age* of October 26, page 554, the three following papers, of special interest to engineering and maintenance of way and structures officers of the railways, will be presented at a session to be held on December 5.

Modern Timber Connectors and Timber-Concrete Construction, by Phillips A. Hayward, chief, Forest Products division, Department of Commerce.

Pre-Framing and Treatment of Structural Timbers, by Earl Stimson, chief engineer maintenance, Baltimore & Ohio.

Machinery for the Pre-framing of Structural Timbers, by J. F. Seiler, service bureau engineer of the American Wood Preservers' Association.

During the afternoon of December 5, there will be an inspection trip to the wood treating plant of the Protexol Corporation at Kenilworth, N. J., where, among other things, opportunity will be afforded to inspect the facilities there for the pressure impregnation of wood to render it decay, insect or fire resistant.

Equipment and Supplies

LOCOMOTIVES

FERROCARRIL NACIONAL DE CHIRIQUI has ordered one 2-8-0 type locomotive from the American Locomotive Company. The offices of the company are at David City, Chiriqui, Panama.

ILLINOIS CENTRAL.—A loan of \$3,000,000 to this company for air conditioning and maintenance work on equipment was announced on November 22 by Public Works Administrator Harold L. Ickes. This loan, which was made out of the old public works appropriations, is in addition to \$12,000,000 already loaned to the Illinois Central to create employment for its track and shop forces. The work to be done with the new loan will create employment for Illinois Central shop forces at Chicago, Ill.; Paducah, Ky.; Centralia, Ill.; Nonconah, Tenn., and McComb, Miss.

The work to be done with the additional loan includes general repairs to 141 locomotives and tenders, general overhauling and repairs to 56 passenger cars and application of air-conditioning to 52, and general overhauling and repairs to 1,297 steel underframe box cars.

FREIGHT CARS

THE UNION PACIFIC is rebuilding 2,447 box cars and 751 automobile cars, a considerable number of the cars having already been completed. Upon completion of this work the Union Pacific plans to convert a number of gondolas into hoppers.

IRON AND STEEL

THE NORTHERN PACIFIC is expected to enter the market for 60,000 tons of rails.

THE CINCINNATI, NEW ORLEANS & TEXAS PACIFIC has ordered 10,000 tons of rail from the Tennessee Coal, Iron & Railroad Company.

NEW YORK CENTRAL.—A contract has been given to the American Bridge Company for about 3,000 tons of steel, for use on the West Side Improvements near Thirty-fifth street, New York City.

THE CHICAGO GREAT WESTERN has ordered 7,100 tons of rails and the necessary track accessories, from the Carnegie-Illinois Steel Corporation and the Inland Steel Company.

ERIE.—A contract has been given to the American Bridge Company for the fabrication and delivery of about 200 tons of structural steel, to be used in elimination work of the Nanticoke avenue and Liberty street crossings of the Erie, in the village of Endicott, N. Y.

THE UNION PACIFIC has ordered 70,000 tons of rails and 30,000 tons of track accessories, placing 29,750 tons of rails with the Colorado Fuel & Iron Company, 29,750 tons of rails with the Carnegie-Illinois Steel Corporation and 10,500 tons of rails with the Inland Steel Company.

Construction

CENTRAL OF NEW JERSEY.—Contracts have been awarded for work on the new station layout, including streets and driveways, at about \$75,000, on the New York & Long Branch, at South Amboy, N. J. Contract for paving between John and Augusta streets let to the Utility Construction Co., New Brunswick, N. J.; contract for new eastbound station and westbound shelter shed, with appurtenances, let to the Charles R. Heddon Co., Newark, N. J., and contract for moving and turning freight station has been awarded to the John M. Hughes Sons' Company, Jersey City, N. J. See *Railway Age*, November 9, page 615.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Railway Water & Coal Handling Company, Chicago, for converting an intermittent water treating plant on the Rock Island at Eldon, Ia., into a plant employing the continuous process. The contract also involves the installation of electric power in place of steam power for operating the air compressing and pumping equipment at this location.

MAINE CENTRAL.—The Maine Public Utilities Commission has consented to the abolition of the Highmoor Farm grade crossing on the line of this road in the towns of Monmouth and Leeds. This is to be accomplished by building an overhead steel highway structure, the work to be carried out by the State Highway commission.

NEW YORK CENTRAL.—The New York Public Service Commission has approved plans, specifications and an estimated cost of \$151,000 for certain work in connection with the elimination of the grade crossings of this road in Syracuse, N. Y. The approved plans cover car facility building, car inspector's building, and section houses, crib wall at facility building, electric drop pit cable and pillar crane. The plans and specifications have been approved by the Syracuse Grade Crossing Commission.

NORFOLK & WESTERN.—In addition to the contract for work above Grundy, Va., let to Haley, Chisholm & Morris, Charlottesville, Va., on the first section of 6.8 miles of its Buchanan branch, as was reported in the *Railway Age* of September 28, page 417, a contract has been let to W. W. Boxley & Co., Roanoke, Va., for the second section, 6.2 miles of this branch. In addition contracts have been let for work on its Dismal Creek branch as follows: Section 3, to Boxley Brothers Company, Orange, Va., 7.5 miles; section 4, to Sturm & Dillard Co., Columbus, Ohio, 7 miles, and section 5, to Morris Gray & Hunter, Roanoke, Va., 6.3 miles.

PENNSYLVANIA.—This company has awarded contracts as follows: To the Rust Engineering Company, Pittsburgh, Pa., for the construction of a machine shop building at Pitcairn, Pa.; to the George A. Fuller Company, Washington, D. C., for the construction of a bridge over New York avenue, N. E., Washington, D. C.; to

J. A. Bader & Company, Inc., Wilmington, Del., for the construction of overhead bridge No. 6.10X, Route No. 40, at New Castle, Del.

STATEN ISLAND RAPID TRANSIT.—This Baltimore & Ohio subsidiary will receive bids until December 9 at the office of H. A. Lane, chief engineer at Baltimore, Md., for building construction, at Tompkinsville, Staten Island, N. Y., in connection with the elimination of grade crossings at Tompkinsville-Stapleton, Staten Island.

Financial

CANADIAN PACIFIC.—*Abandonment.*—The Board of Railway Commissioners of Canada has authorized this company to abandon operation of that portion of the New Brunswick Southern known as the Shore Line sub-division of the C.P.R. extending from Shore Line Junction to Bonny River, N.B., 28.8 miles.

CARLTON & COAST.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Carlton, Ore., to Tillamook Gate, 13.84 miles.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its Rib Falls line, 4.8 miles, in Marathon county, Wisconsin.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Hearing on Ratification of Trustees.*—The Interstate Commerce Commission has authorized James D. Colyer, Louis I. Kane and Henry Schenck as an independent committee for the protection of bondholders to intervene in the proceedings concerning the reorganization of this company and on their petition has ordered a hearing at Washington on December 2 in the matter of the ratification of the appointment by the court of H. A. Scandrett, Walter J. Cummings and George I. Haight as trustees.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon part of its Hannibal branch, from Hannibal, Wis., to Hughey, 4.17 miles.

ILLINOIS CENTRAL.—*R.F.C. Loan.*—Finding that the company is not in need of financial reorganization at this time the Interstate Commerce Commission, Division 4, has approved an extension for two years of loans made by the Reconstruction Finance Corporation to the amount of \$7,778,000 maturing on December 7.

MISSOURI PACIFIC.—*Company Regards Reorganization Plan as Practicable.*—William Wyer, treasurer of the Missouri Pacific, has replied to a letter from O. E. Sweet, director of the Bureau of Finance of the Interstate Commerce Commission, dated November 7, in which Mr. Sweet had asked the present opinion of the debtor companies involved in the reor-

ganization plan for the Missouri Pacific system filed on July 31 in view of the additional burdens on operating expenses imposed by the railroad retirement act, the social security act, and the coal conservation law, subsequent to the date of the plan, and also in light of the earnings since that date. There have also been some criticisms of the plan as "impracticable" in statements filed with the commission by representatives of bondholders. Mr. Wyer answered some of these criticisms in his reply and said it was the belief of the debtor that the net income for 1935 will amply cover the fixed charges proposed in the plan, \$7,503,831. He said the plan was designed to make the reorganized Missouri Pacific a company with a permanent financial structure that would not again require reorganization and renewed the request that hearings on the plan be set for an early date. He pointed out that the fixed charges proposed were \$3,000,000 less than the average earnings for 1932, 1933, and 1934, and said that the plan was so constituted that any variation in fixed charges does not render necessary any fundamental change in the plan, because it would be necessary only to make slight changes in the percentages of bonds to be offered to the various classes of bondholders. On the assumption that the acts would be held constitutional he gave estimates that the annual cost to the system companies of the railroad pension law would be \$1,676,756 and that the cost imposed by the social security act would be \$484,104 in 1936 and \$1,452,312 after 1938, a total after 1938 of \$3,129,068. However, he said, the new law would probably eliminate the present pension expense of \$800,000 a year. As to the coal law he said it was already in process of litigation and that in any event the cost would be small. Discussing the earnings Mr. Wyer said that unusually large expenditures have been made for maintenance by the trustees and that when the reorganization of the Missouri Pacific is effected it will be in

better shape as to its physical property than ever before.

NEW YORK CENTRAL.—*Abandonment.*—The West Shore has applied to the Interstate Commerce Commission for authority to abandon 23 miles of its Chenango branch, from Cazenovia, N. Y., to Earlville.

NEW YORK, NEW HAVEN & HARTFORD.—*Savings Bank Interest.*—Mutual Savings Banks in New England and New York have organized a committee to follow their interests in the pending reorganization of this company. The secretary of the committee is D. S. Sylvester, executive manager of the Savings Banks Association of Massachusetts, Boston, Mass.

PENNSYLVANIA.—*Securities.*—The Interstate Commerce Commission has modified its order of January 22, 1934, to limit to \$31,900,000 the amount of 30-year secured 4-per cent bonds which may be issued thereunder. The original order permitted an issue of \$45,000,000 which was subsequently reduced to \$37,000,000.

ST. LOUIS SOUTHWESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon operation under trackage rights over the Missouri Pacific from McDonald, Ark., to Bridge Junction, 31 miles, and to cancel the certificate authorizing operation over the Missouri Pacific between Fair Oaks, Ark., and McDonald.

WESTERN PACIFIC.—*Trustees.*—An item in the issue of November 9 stating that the Interstate Commerce Commission had ratified the appointment of T. M. Schumacher and Sidney M. Ehrman as trustees was erroneously published under a caption referring to the Denver & Rio Grande Western.

Average Prices of Stocks and of Bonds

	Nov. 26	Last week	Last year
Average price of 20 representative railway stocks..	39.80	39.34	36.93
Average price of 20 representative railway bonds..	74.10	73.00	74.65

* * * *



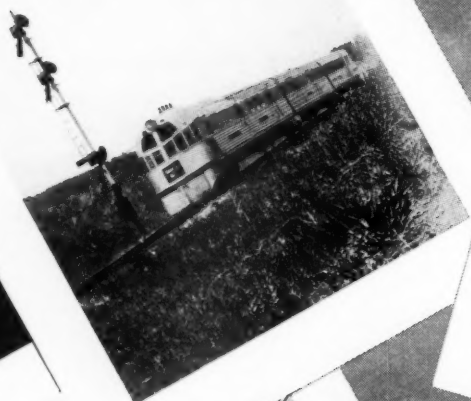
Station Area of Grade Separation Project Completed Recently on the Long Island at Great Neck, N. Y.—High Ground Water, Which Makes Track Depression Impractical on Most Parts of the Island, Caused Severe Difficulties at Great Neck, and Required that the Entire Track Cut Shown be Heavily Sub-Drained

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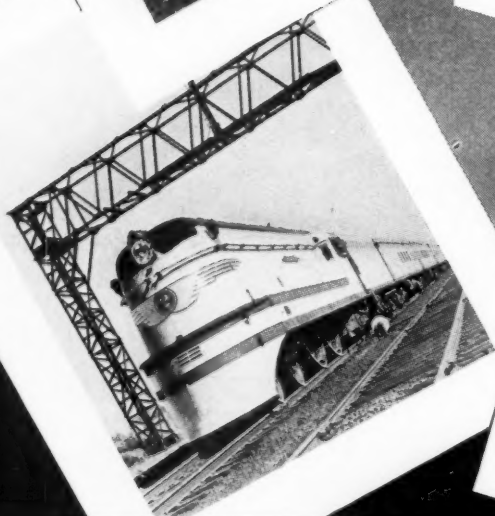
MODERN SIGNALS PERMIT HIGH SPEED



Electric trains on the Pennsylvania, between New York and Washington, maintain their high-speed schedules with the aid of "Union" Signaling Systems, including Coded Continuous Cab Signals, Coded Track Circuit Control and Position Light Signals. " " " "



The Burlington's "Zephyr" is enabled to maintain its high-speed schedules by the aid of automatic block, and interlocking signaling systems and "Union" Centralized Traffic Control. " " " " " "



The Milwaukee "Hiawatha" speed is not affected by adverse weather conditions as it is protected by "Union" Wayside Signals supplemented by Continuous Cab Signals. Indications are always visible because the cab signal rides in the cab with the engineman where nothing can obstruct its indication. " " " " " "

with Safety

TO MEET competition successfully, increase patronage and reduce operating costs, more than deluxe, high-speed, lightweight equipment is necessary. Of what avail such equipment if you can't get it over the road? "Union" modern signaling systems keep trains moving and have demonstrated repeatedly that they are self-liquidating investments. » » » » » » »

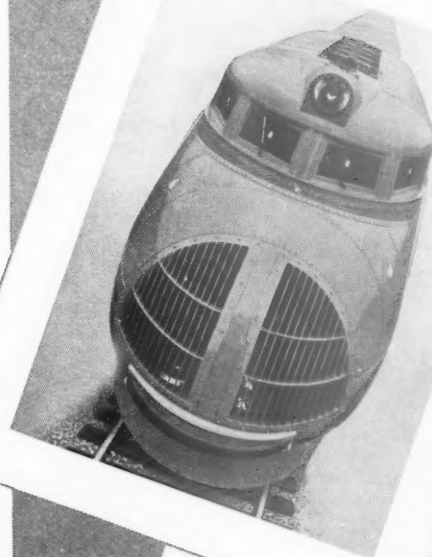
Such results have not been confined to passenger service. The increased passenger revenue and reduced passenger operating expenses have been exceeded in the transportation of freight. » » » » » » »

Ask our nearest district office to explain in detail how "Union" Signaling Systems and apparatus can help expedite all types of service and assist in maintaining operating expenses at a fair ratio. They will be glad to furnish a complete list of the roads so benefited. » » » » » » »

1881



1935



On their speedy trips between Chicago and the Pacific Coast, the Union Pacific's lightweight, high-speed trains, with the aid of "Union" Continuous Cab and Wayside Signals, are enabled to maintain schedules over long distances. » » »

Union Switch & Signal Co.

SWISSVALE, PA.

NEW YORK

MONTREAL

CHICAGO

ST. LOUIS

SAN FRANCISCO

Supply Trade

H. H. Simmons, vice-president of **Russell T. Gray, Inc.**, has resigned to become advertising manager of the **Crane Company**, Chicago.

Keith J. Evans, manager of sales promotion of **Joseph T. Ryerson & Son, Inc.**, has also been appointed manager of the sales promotion division of the **Inland Steel Company**.

Frank V. Bush, sales office manager of the **Allegheny Steel Company**, Brackenridge, Pa., has been promoted to service manager, succeeding **M. E. Harris**, who was recently promoted to assistant general manager.

Sydney Buckley, formerly vice-president and general manager of the Niles division, at Philadelphia, Pa., of the **Shepard Niles Crane & Hoist Corporation**, has been elected president of the corporation, and **Herbert W. Gledhill**, formerly manager of the Philadelphia district office, has been elected vice-president and general sales manager; both with headquarters at Montour Falls, N. Y.

C. A. Cherry, assistant manager of sales, Carbon Bar division of the **Republic Steel Corporation**, has been appointed district sales manager in the Buffalo, N. Y., territory, succeeding **Thomas B. Davies**, who has been transferred to Republic, Alloy Steel division, Massillon, Ohio, as special representative. After Mr. Cherry's graduation from the Johnstown, Pa., high school, he became connected with the Cambria Steel Company in the Wire Sales division. In 1917 when this company merged to form the Midvale-Cam-

bria Steel Company, he served in the Philadelphia office of the new organization. The following year he became private secretary to W. H. Donner, head of the Donner Steel Company and shortly afterwards he was appointed assistant vice-president in charge of sales of that company. In 1930 when the Donner Steel Company became a part of the Republic Steel Corporation, he went to Republic as assistant manager of sales, Carbon Bar division, which position he held until his transfer to Buffalo.

OBITUARY

Arthur Wyman, assistant to the president of the Chicago Railway Equipment Company, Chicago, died suddenly on November 19.

Edwin Wilbur Rice, Jr., honorary chairman of the board of directors of the General Electric Company, died at his home in Schenectady, N. Y., November 25 after a long illness, at the age of 73 years.

Robert Tift Turner, vice-president and general sales manager of the Shepard Niles Crane & Hoist Corporation, Montour Falls, N. Y., died in New York City on November 13, at the age of 49 years.

TRADE PUBLICATION

LOCOMOTIVE DRIVING TIRES.—In a sixteen-page illustrated booklet entitled, "Locomotive Driving Tires," the Taylor Forge & Pipe Works, Chicago, presents an interesting description of the general method which is used in manufacturing the locomotive driving wheel tires made by this

company and distributed by the Wilson Engineering Corporation. The first part of the booklet calls attention to the increased speeds and heavier loads which feature modern locomotive operation, and frankly asks the question, "Are locomotive tires keeping pace?" The necessity for new standards to meet the new requirements is pointed out as well as the refinements in forging, rolling, and heat treating introduced with the Taylor Forge process to produce thoroughly sound and hard, yet ductile, tires which will give relatively long and reliable service life under modern operating conditions. Photo-micrographs are included showing the grain structure—magnified 100 times—in the original steel billet, in the pierced "doughnut," after the tire is rolled and after final normalizing. The last few pages of the booklet contain a description of and tabular data relating to Taylor Forge seamless steel welding fittings for locomotive, yard and terminal piping.

Railway Officers

EXECUTIVE

In the *Railway Age* of November 16 an announcement was made of the appointment of **E. M. Durham, Jr.**, as chief executive officer of the Chicago, Rock Island & Pacific, with headquarters at Chicago. In a circular dated November 22 the three trustees of this road announce that Mr. Durham will have "full

Rail Lines As Life Lines

To the generation that came of age when railway empire-building was still in progress, there is something shocking, almost blasphemous, in the story of the dismemberment of the Minneapolis & St. Louis, now proposed to the Interstate Commerce Commission. Think of it! A great system of trunk line and branches totaling 1,647 miles, offered six times upon the auction block in vain for want of a buyer! What must the shades of Harriman, Hill, Scott, Vanderbilt, Garret and Cassatt be muttering today on the banks of the Styx!

So the yet vital links in the dying chain of rails will have to be divided up among its neighboring and competing lines! The dead and withered branches will be topped off and left to decay. It was scarcely three decades ago that the junking of even a switch track seemed to be abnormal, a sin against American progress. It seemed that there never could be too many railroads. Even logging and mining lines usually built up the country they traversed, so that when the trees and ores were gone, farms and towns had grown up to generate enough

traffic to keep the rails shining and the switch lamps gleaming.

Today abandoned embankments, cuts and tunnels of dead tap-lines are a feature of the American landscape that every motorist expects to see on a cross-country tour. In mining regions the ghost railroad is as commonplace as the ghost town.

It is a rare generation that notes its own great mile post of history. When our continental web of rails some 20 years ago had spread over the land until practically every bit of first-class productive terrain was within 12 miles—horse-and-wagon distance—of a rail line or railhead, few, if any, noted that there were no more worlds for railroad Alexanders to conquer. From now on, the future of railroading lies in internal improvement, not in territorial expansion. Tens of thousands of miles of superfluous line may have to be abandoned. But over the main trunk lines the bulk of American commerce will continue to move.

Away from the water courses, there is no economical substitute for the rail-

road in mass transportation. It is against American policy and tradition to build up a purely coastal and riverine civilization. The model of Egypt, Babylon and China is not our model.

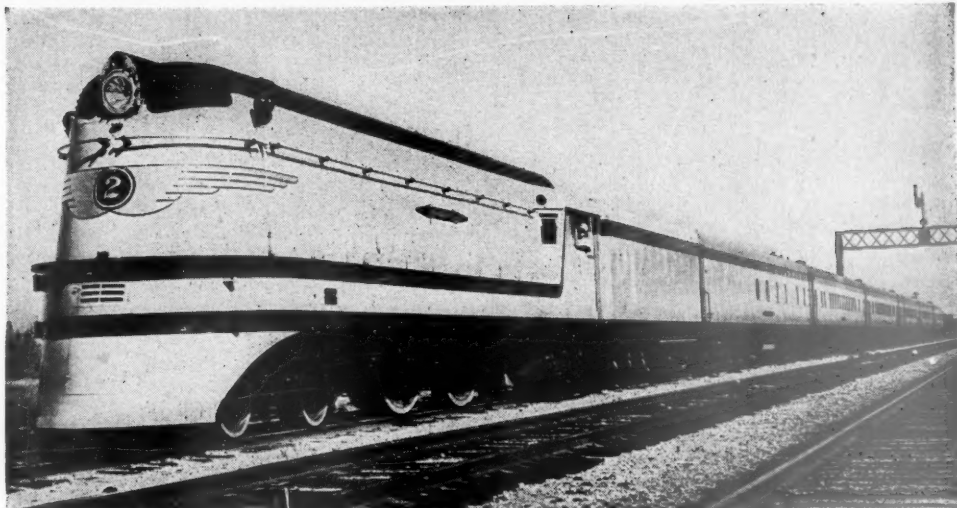
In the readjustment of the railway corporate and fiscal structure to fit the new physical conditions imposed by motor rivalry, care must be taken that no lines be abandoned merely for financial reasons. Where there is real physical need for rail traffic, the lines must be re-organized so that their capital structures fit the traffic. Traffic routes must not be changed to fit bond issues.

National defense requires that the transcontinental lines especially be conserved. Merely to support naval operations in the Pacific Ocean, it has been calculated that the nation must be prepared at all times to deliver at Pacific Coast points 33 trains of 50 loaded cars every day. To defend the west coast against invasion by land, vastly greater transport would be required. In peace, America is still primarily a railroad country. In war, the rail line is the national life line.

—From the Chicago Daily News.

Continued on next left-hand page

Vital Parts



On The Nation's Best paying Passenger Power

PRACTICALLY all of the steam passenger power built recently or modernized to meet the new requirements is equipped with wearing parts made of HUNT-SPILLER *Air Furnace* GUN IRON.

Increased speeds demand quality material. The resistance of HUNT-SPILLER *Air Furnace* GUN IRON to frictional wear and high superheat temperatures can be depended upon to meet any increase in service loads.

Applications on any class of power will result in greater efficiency, more dependable operation, economical fuel consumption and lower maintenance costs.

H S G I

Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For
Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing
for Cylinders and Valves
(Duplex Springs for Above
Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J.G. Platt, Pres. & Gen. Mgr. V.W. Ellet, Vice-President

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383 Dorchester Ave.

South Boston, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 70 North Bank Rd., Montreal, P. Q.

Export Agent for Latin America:

International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON

Air Furnace

jurisdiction over all departments" and that "the above appointment is made with the hearty approval of **James E. Gorman**, who remains with the system as president of the company and as trustee under appointment of the United States District Court."

FINANCIAL, LEGAL AND ACCOUNTING

William Henry Barrett, whose appointment as auditor of passenger accounts of the Florida East Coast at St. Augustine, Fla., was noted in the *Railway Age* of November 23, was born on July 29, 1894, at Savannah, Ga. Mr. Barrett received his education at Savannah common and high schools and entered railway service in November, 1910, as a ticket assorter and file clerk in the office of the auditor of traffic, passenger bureau of the Central of Georgia. In that department he held various positions concerning passenger accounting and also served as ticket collector for 18 months. Mr. Barrett left the service of the Central of Georgia in May, 1925, to accept the position of chief clerk to the auditor of passenger accounts of the Florida East Coast, which position he held until his recent appointment as auditor of passenger accounts.

George D. Moffett, industrial commissioner of the Chesapeake & Ohio, has also been appointed general real estate agent, with headquarters at Huntington, W. Va., succeeding **R. P. Eubank**, deceased. Mr. Moffett entered the service of the Chesapeake & Ohio as a ticket taker and later became general agent at Charles-



George D. Moffett

ton, W. Va. Mr. Moffett served as assistant manager of the industrial department of the Chesapeake & Ohio and subsequently was appointed industrial commissioner of the Pere Marquette. In 1933 he became industrial commissioner of the C. & O. and the Pere Marquette, with headquarters at Huntington, W. Va., and Detroit, Mich., which positions he held at the time of his recent appointment.

OPERATING

W. S. Higgins, division engineer of the Southern Pacific Lines in Texas and Lou-

isiana and the Texas & New Orleans, with headquarters at Victoria, Tex., has been appointed superintendent of the Victoria division, with the same headquarters, effective December 1, succeeding **Thomas Scott**, deceased.

L. T. Foster, superintendent of the Virginia division of the Seaboard Air Line, with headquarters at Raleigh, N. C., has been appointed superintendent passenger service, reporting to the general superintendent transportation, with headquarters at Norfolk, Va. **H. M. Terrell** has been appointed superintendent of the Virginia division at Raleigh, succeeding Mr. Foster.

C. S. Pond, terminal trainmaster of the Southern Pacific Lines in Texas and Louisiana and the Texas & New Orleans, with headquarters at Houston, Tex., has been appointed trainmaster, with the same headquarters, succeeding **H. L. Bell**, promoted. **C. T. McKittrick** has been appointed terminal trainmaster at Houston, succeeding Mr. Pond. These appointments will become effective December 1.

TRAFFIC

Paul A. Walsh has been appointed assistant to freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., succeeding **A. E. Freeman**, who has been appointed assistant to western traffic manager, with headquarters at Seattle, Wash.

ENGINEERING AND SIGNALING

H. L. Bell, trainmaster of the Southern Pacific Lines in Texas & Louisiana and the

Texas & New Orleans, with headquarters at Houston, Tex., has been appointed division engineer, with headquarters at Victoria, Tex., effective December 1.

OBITUARY

Clint C. Hine, general solicitor of the Chicago, Indianapolis & Louisville, with headquarters at Chicago, died on November 23 in a hospital at Chicago. Mr. Hine was born on March 4, 1884, at Lafayette, Ind., and entered railway service with the Monon as a stenographer in 1902. Later in the same year he was transferred to the law department as chief clerk, remaining in this position until 1908, when he went with the Grand Trunk Western, where he served in a legal capacity. Mr. Hine returned to the Monon in 1912 as general claim agent, being appointed assistant general attorney in 1914 and general attorney in 1917. He had served as general solicitor since 1920.

H. R. Mathewson, general passenger agent of the Canadian Pacific, with headquarters at Winnipeg, Man., died in that city on November 24 at the age of 51. Mr. Mathewson entered railway service in 1904 as a clerk in the passenger department of the Canadian Pacific in Montreal. In 1911 he was transferred to the Chicago office, and subsequently to the Toronto and New York Offices, returning to Chicago as travelling passenger agent in 1916. The following year he went to St. John in the same capacity. In 1920 he became assistant general agent at Chicago, and in 1924 general agent at Buffalo. Mr. Mathewson was appointed general agent at Toronto in 1928 and he became general passenger agent with headquarters at Winnipeg in 1930.

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Modernistic Diner on the New Haven's "Banker's Express," Operating Between New York and Springfield, Mass.